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THE UNIVERSITY OF ALBERTA

AN EXPLORATORY STUDY OF POSTPARTUM SLEEP PATTERNS OF MOTHER-INFANT DYADS

by

IRIS E. CAMPBELL

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE
OF MASTER OF NURSING

FACULTY OF NURSING

EDMONTON, ALBERTA

FALL, 1985

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Dear Iris,

In reply to your letter of June 10, you do have my permission to include the Sleep Activity Record in the appendix of your thesis.

I was pleased to hear further of your study.

Best regards,

Kathryn E. Barnard

Kathryn E. Barnard, R.N., Ph.D.
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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled AN EXPLORATORY STUDY OF POSTPARTUM SLEEP PATTERNS OF MOTHER-INFANT DYADS submitted by IRIS E. CAMPBELL in partial fulfilment of the requirements for the degree of MASTER OF NURSING.

Janet G. Kerr
Supervisor

Elizabeth McDaniel

Douglas M. Smith

Date: August 30, 1985

DEDICATION

To the memory of my mother

THOMASINA CAMPBELL

who loved life and learning

ABSTRACT

This study of maternal-infant sleep patterns used an exploratory descriptive approach. The research objectives were: 1. to describe the sleep patterns of mothers and their infants from the second to fourth postpartum week; 2. to describe the relationship between the sleep pattens of the mother and her infant during this time; 3. to examine the quality of mother-infant interaction in relation to the changes that may have occurred in the mother's sleep patterns from the second to fourth postpartum week.

The subjects were nine primigravida mothers selected from the offices of two obstetricians. All the mothers had a normal prenatal course, labor and delivery. All babies were healthy at birth and had no serious postnatal complications. Data were collected from the second through fourth week of the postpartum period by means of unstructured, non-directive interviews and the Nursing Child Assessment Sleep Activity Record and the Nursing Child Assessment Feeding Scale instruments.

The findings showed that the mothers obtained as many hours sleep in the postpartum period as they did before pregnancy. However, this sleep was subject to many interruptions and it is probable that its deep, restorative nature was lacking. All of the subjects felt less rested and complained of tiredness which they ascribed to meeting the needs of their infants rather than with actual reduction in the number of hours of sleep. Five of the women were afraid to go into a deep sleep in case they would be unable to hear their baby cry. The mothers described tiredness in two ways, physical and emotional. Physical

tiredness could be alleviated by obtaining three to four hours of natural, uninterrupted sleep; however, emotional tiredness could not be resolved easily and was related to the responsibility of caring for the infant 24 hours a day.

Support from partners and significant others was critical to the mothers in assisting them to adapt to and cope with the responsibilities of motherhood. Mother-infant interaction (as measured by the NCAFS tool) did not appear to be affected by tiredness but the mothers' caretaking abilities did tend to be less than optimum when they were tired.

The use of the NCASAR tool not only verified the mothers' descriptions of mother-infant sleep-wake patterns but also helped the women to gain an understanding of their infant's sleep-wake behaviors. Mothers who organized their daily schedules around the needs of the infant appeared to cope more effectively than the mothers who tried to fit the infants into their own schedules. Mothers perceived professional advice to be less than adequate regarding sleep-wake cycles of newborns, feeding schedules, changes in life-style and assistance on how to adapt and adjust to being a first-time mother.

The findings confirm the unpredictable nature of infant sleep-wake cycles during the early postpartum period. While the total amount of time the infant sleeps during the night increases by the fourth postpartum week, the length of individual sleep periods remains erratic and unpredictable.

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CHAPTER I

INTRODUCTION

Certain events in life are known to make major demands on the coping abilities of the individual. One such event, that of becoming a mother, has been identified as a time of crisis in a woman's life (Bull, 1981). It is generally agreed that the weeks following the birth of a child are stressful for the woman and her family as they try to adjust their lives to include the new member. Once the new mother leaves the hospital with her baby she has little contact with nursing or medical personnel. The community health nurse does visit, but there may be a delay of seven, ten or even more days before this occurs. A postpartum follow-up visit to the doctor is also scheduled four to six weeks after the baby's birth. As long as the mother and baby remain healthy, the woman is frequently left on her own to adjust her life and cope with the responsibility of caring for the infant.

At the time the mother assumes responsibility for the care of her infant, she is physically and emotionally recovering from the effects of childbirth, an experience which may interfere with her ability to interact with and to care for her infant in the early weeks of the postpartum period. During the past 20 years many research studies have focussed on the importance of the mother-infant relationship in the first postpartum weeks and how this crucial relationship involves continuing adjustments between the infant and the mother. However, the literature is sparse with respect to patterns of mother-infant sleep-wake behavior and how adaptations in these patterns may affect

the developing relationship.

Brazelton (1972) carried out hundreds of observations in an attempt to determine which factors affect the mother-infant relationship during the initial postpartum period, yet he did not identify sleep-wake patterns as being crucial to the establishment of mother-infant interaction. Antithetically, Reva Rubin, who has written extensively on bonding, stated: "If a new mother does not obtain a sufficient amount of sleep, she may develop 'sleep hunger' which can be detrimental to the way in which she provides care for and interacts with her infant" (Rubin, 1961, p. 684). Rubin's observation is supported by Robson and Moss (1976) who carried out a longitudinal study of 54 mother-infant dyads to identify determinants of maternal attachment. The data were obtained by means of prenatal and postpartum interviews and home observations of the mother-infant pair in the first three months of the postpartum period. A major finding of this study was that a mother's ability to provide adequate care for her infant was dependent on the amount and quality of sleep obtained during a 24 hour time period.

Mothers and infants have been observed to have very different sleep patterns during the first postpartum weeks (Luce, 1971; Deters, 1980). When a baby comes into the home the sleep pattern of every family member may be disrupted due to lack of synchrony between the sleep patterns of the infant and the adults. Palmer (1976) has postulated that by the fourth week of life the infant's sleep-wake patterns begin to synchronize with those of the adults in the family, but this has not been substantiated.

It has been shown that changes in life-style are energy consuming for individuals who are healthy and well rested (Norris, 1983). When one considers that postpartum mothers are using energy for physical and mental restoration and for the establishment of lactation, it could be expected that they may be unable to cope with the demands of their infants if they have had insufficient sleep.

The findings of a study by Karacan, Heine, Agnew, Williams, Webb and Ross (1968) showed that sleep patterns of women during the postpartum period appeared to be similar in some respects to the sleep patterns of insomniacs, particularly in relation to a reduction of the deep sleep state. This deep state is necessary for physical and mental restoration to ensure that the individual will be sufficiently rested to cope with everyday tasks and social interaction. If a new mother is deficient in restorative sleep, she will be physically and mentally tired and she may be unable to make the adjustments and adaptations necessary for accomplishing the tasks of motherhood.

As a result of interest in how mothers adjust to the demanding role of caring for a new baby, the investigator spoke to them during the early postpartum period. Many concerns were identified in relation to the new tasks which confronted them. One topic which emerged and appeared to be important to all mothers was sleep and how caring for the infant would affect this essential requirement.

A review of the literature revealed a paucity of research, by nurses, either on mother-infant sleep patterns or on the effect of disrupted maternal sleep patterns on the mother's ability to care for and interact with her infant. Given the concerns of mothers regarding

the importance of sleep, information obtained from a study of mother-infant sleep patterns during the second through fourth postpartum weeks could provide nurses with knowledge of the factors which affect mother-infant sleep patterns during this stressful time that involves many major adjustments in each mother's life.

Purpose of the Study

The purpose of this study was to describe the sleep patterns of mothers and their infants during the second through fourth postpartum week. The specific objectives were as follows:

1. to describe the sleep patterns of mothers and their infants from the second to fourth postpartum week;
2. to describe the relationship between the sleep patterns of the mother and her infant during this time;
3. to examine the quality of mother-infant interaction in relation to the changes that may have occurred in the mother's sleep patterns from the second to fourth postpartum week.

The Need for the Study

The primary need for this study stemmed from the nurse's role in preparing the mother to fulfil her role as caregiver in the postpartum period. The Lafayette Institute, which specializes in conducting sleep studies, was unable to locate any researchers who were studying maternal-newborn sleep patterns. Dr. Barnard, who developed the Nursing Child Assessment Sleep Activity Record at the University of Washington, knew of no studies that had been carried out on postpartum

sleep patterns. However, in talking with mothers in the postpartum period, this investigator identified that one of their most common complaints was tiredness related to loss of sleep. As the nurse is in a unique position to give advice to mothers, information on sleep patterns of mothers and infants will assist nurses by providing knowledge of the factors that affect this essential need which is disrupted when a baby comes into the home.

A better understanding of mother-infant sleep patterns during the first postpartum weeks is needed, so that nursing care can be planned and intervention instituted to ensure that mothers are aware of the differences in mother-infant sleep patterns. It is important that nurse clinicians during the prenatal period should educate women about the differences that can be expected in sleep patterns in the first postpartum weeks. Then, during the early weeks following delivery, the mothers can use knowledge of change in sleep patterns to assist them to adapt their daily activities so that time and energy will be available for providing care for their infants which is crucial to development and continuation of the mother-infant relationship.

Another important reason for this study was to determine the most effective health care strategies that nurses can use to promote rest and encourage emotional adjustment to prevent 'sleep hunger' which can cause or compound the symptoms of depression and may lead to postpartum psychosis (Errante, 1985).

Viewing the Mother and Infant as a System

The rationale for viewing the mother and her infant as a system was

based on the work of von Bertalanffy (1968), who described the general systems approach. In this model a system is defined as a set of constructs interacting with each other within a boundary which filters both the kind and the rate of flow of inputs and outputs to and from the system (Smoyak, 1969). Hall and Fagan (1968) define a system as: "A set of constructs, components or parts with relationships between the parts and between the properties of the parts" (p. 81). In the systems approach, human beings are seen as open systems capable of exchanging energy or information with the environment. If the energy exchange is ordered and available, a state of negentropy exists, whereby the individual can use the energy for daily activities. When the energy exchanged is disordered or unavailable, the individual is in a state of entropy, whereby the energy is not converted to a usable form, and will result in a slowing down of the system (Moughton & Hazzard, 1972).

In the general systems approach, the mother and infant can be viewed either as individual open systems or together as a sub-system within the complete family system. As individuals within the open system (Figure 1.1), they exchange energy and information with each other during the processes of care-taking and interaction. Both mother and infant expend energy during these activities and will react to and change their responses in relation to the feedback received.

Therefore, the systems model is a useful approach for viewing the mother and infant as a system within the larger supra-system of the family.

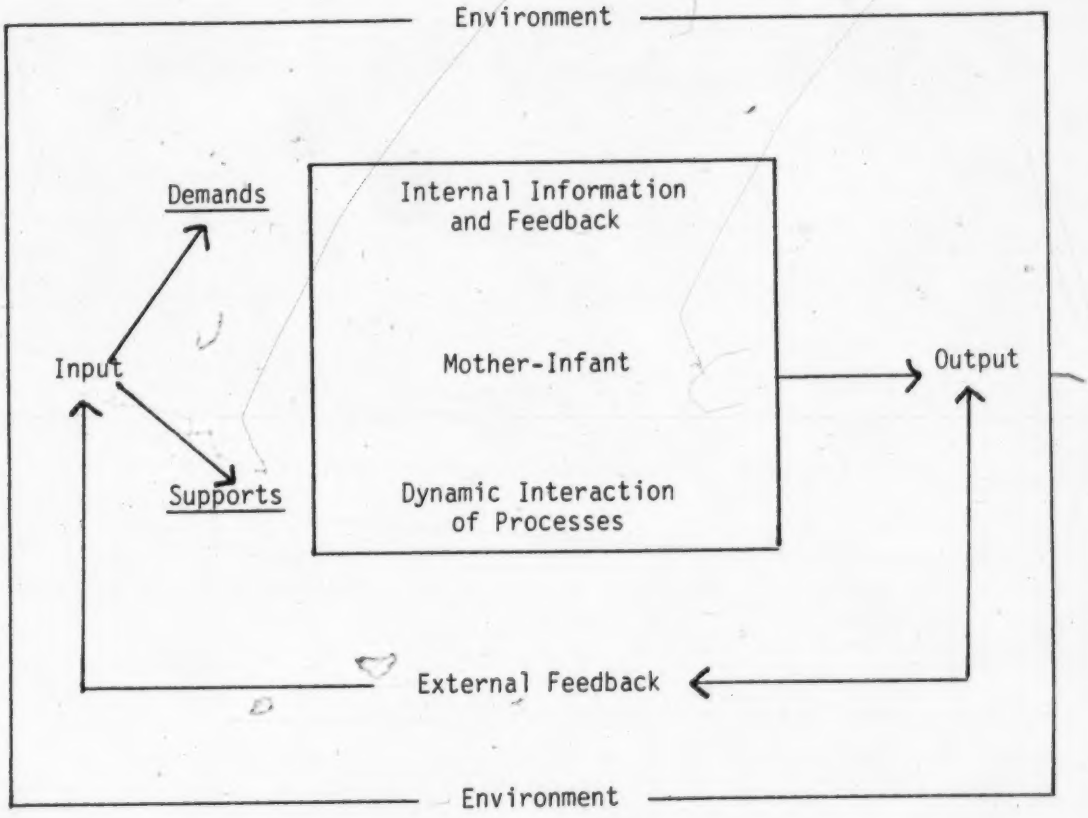


Figure 1.1. A diagrammatic representation of the mother-infant dyad as an open system.

Definition of Terms

In this study, the following terms were defined as follows:

Sleep Patterns: The sleep-wake cycles recorded by the mother for herself and her infant during a period of 24 hours.

Primipara: A woman who has given birth to a baby for the first time.

Normal Full Term Infant: An infant, born alive, with no complications at time of birth, who has been assessed as being between 38 and 42 weeks gestation and with no apparent congenital anomaly.

Care-taking Activities: The necessary daily tasks that a mother performs for her infant which are necessary for the life, health, and well-being of the infant, e.g. feeding, changing, bathing.

Mother-infant Interaction: The process of exchange, established in the first four weeks of the postpartum period between the mother and her infant.

Overview of the Study

This study is presented in five chapters. The first two chapters comprise the introduction and a review of the relevant literature. Chapter III describes the study methods. The findings are presented in Chapter IV and the discussion, limitations, conclusions and recommendations for further study can be found in the final chapter.

CHAPTER II

REVIEW OF THE LITERATURE

A review of nursing, medical and health-related literature was undertaken for the purpose of establishing a background for the study of sleep patterns. The major areas of the literature which were examined were as follows: purpose of sleep; early studies on sleep; sleep patterns in newborn infants; and, mother-infant sleep patterns.

The Purpose of Sleep

Most of the early studies on sleep and sleep patterns showed that the purpose or function of sleep is debatable. Several hypotheses have been set forth by Dement (1972) to explain why human beings pass from wakefulness into the state of sleep and back to wakefulness. One school of thought is that the active state of the brain requires periodic interruption for recovery of the brain cells. Hartman (1973) postulates that sleep results from fatigue brought on by depletion of the body's energy stores due to the demands of the physical and mental activity. Snyder (1969) believes that the purpose of sleep is to restore individuals from the stresses and exertions of waking life. It is generally accepted that most human beings spend six to eight hours asleep within the circadian cycle of 24 hours (Freemon, 1972; Hayter, 1980; Kleitman, 1963; Murray, 1965). At birth, the infant sleeps for about 17 to 18 hours in a 24 hour period, but the average length of a sleep period may be as short as two to three hours.

Early Studies on Sleep

Many of the early research studies on sleep and sleep patterns were done by psychologists and biologists in the laboratory. It was postulated that sleep occurred in two distinct phases rather than in a single phase that merely varied along a continuum in depth (Berger, 1969). With the discovery of the electroencephalogram in 1929 it became possible to define five stages of sleep (Dement & Kleitman, 1957).

In stages one through three, the individual gradually progresses to the deeper levels of sleep but can still be easily aroused. In stage four, sleep is very deep and arousal is difficult. At the beginning of a sleep cycle, the individual begins in stage one and progresses through to stage four. In each of these stages, sleep is categorized as non-rapid eye movement sleep (NREM). At the end of about 90 minutes sleep, there is a gradual return through the lighter stages to stage one. However, instead of entering stage one or awakening at this time, the fifth stage of sleep, termed rapid eye movement sleep or REM sleep is entered. This pattern of sleep continues through the sleeping hours (Dement, 1972).

As a result of these studies, a relationship between deep sleep and REM sleep was established and normal sleep patterns were identified forming the basis for many of the later studies on sleep patterns (Hayter, 1980). Unfortunately, none of the early studies identified the clinical significance of sleep patterns or how the changes in sleep patterns which occur during pregnancy and the postpartum period may

affect the physical and mental functioning of the individual.

Sleep in Pregnancy and Postpartum Period

There is very little information on sleep patterns during pregancy and the postpartum period in the literature. Karacan et al. (1968) carried out two studies which focussed on the sleep cycles of women during pregnancy and the postpartum period. Their studies showed that the sleep patterns of women undergo changes during the last trimester of pregnancy and the postpartum period, since more time is spent in light sleep (stages one and two of NREM sleep) and less time is spent in deep sleep (stage four of NREM sleep). This information could be useful to nurses when assisting mothers in planning care for their infants. Mothers who are deficient in the deep type of sleep are likely to be both physically and mentally tired, and may not have enough energy to care for their babies.

Errante (1985) postulates that many factors contribute to the development of postpartum depression and other psychogenic disorders. One factor, fatigue due to lack of sleep, is universal unlike other variables which occur in only some cases. Fatigue has also been related to a sense of rejection and failure on the part of the mother, particularly if her care does not result in a contented baby (Rubin, 1984). Rubin's conclusion is supported by the work of Robson and Moss (1976) who reported that a mother's ability to provide adequate care for her infant was influenced by the amount and quality of sleep obtained in a 24 hour period.

Sleep Patterns in Newborn Infants

The sleep patterns of newborn infants are very different from those of adults. At birth, the infant spends most of the day and night asleep. The average amount of sleep for a newborn infant is 17 to 18 hours during a 24 hour period usually in two to three hour spells. During the first two weeks of life most of this sleep is REM (stage five) from which the infant can be aroused easily by stimuli. During the next four weeks of life, this type of sleep gradually decreases and is replaced by deeper stages. Periods of wakefulness increase and recent studies have shown that these periods facilitate socialization and interaction (Brazelton, 1982; Metzoff & Moore, 1977). A study by Barnard (1984) reported that the average sleep hours for a newborn is 13.7 hours. This amount represents a shorter average sleep period than was reported in her earlier studies.

Mother-Infant Sleep Patterns

The literature in relation to mother-infant sleep patterns is extremely limited. It is only in the past ten years that nurse researchers have become interested in this area. Barnard (1978) observed that mothers were often puzzled by the sleep patterns of their infants because the sleep patterns differed from their own. As a result of these differences, mothers often had difficulty in organizing their shcedules around those of their infants. From these observations, Barnard developed the Nursing Child Assessment Sleep Activity Record (NCASAR) for use by mothers in recording their infants'

sleep-awake cycles. By using this record, mothers often became more aware of their infants' patterns of sleep-awake behavior over a period of time. It also allowed the mothers to take a more objective look at their own behavior in response to their infants' sleep-awake periods and to organize their activities around the sleep-awake periods.

Luce (1971) and Deters (1980) postulated that the reason for differences in mother-infant sleep patterns was that the newborn's circadian rhythms are out of synchrony with those of the mother. However, after the fourth postpartum week, it is likely that due to the mother-infant interactions that result from the infant's need for care, the infant's circadian rhythms begin to fit into the adult pattern. This move towards synchrony is supported by Palmer (1976).

Clinical Studies on Sleep

Some clinical studies on sleep patterns of patients in hospital were undertaken but as they were conducted in intensive care settings the findings cannot be generalized to the normal postpartum setting of home or hospital. In these studies the major factors which contributed to disturbance in sleep patterns were noise, treatment, and personal care routines (Haslam, 1970; Hilton, 1976; Kornfield, 1971; Walker, 1972; Woods, 1972).

From this review of the literature, some factors relevant to a study of mother-infant sleep patterns and interaction have been identified. These are presented in Figure 2.1. The factors have been grouped first in relation to time of occurrence, that is, prenatal or postpartum period. The second grouping identifies whether the

MOTHER

PRENATAL

1. Changes in sleep patterns occur during the last trimester of pregnancy which can be detrimental to physical and mental well-being (Karacan et al., 1968.
2. Some women require eight to nine hours of sleep prior to pregnancy (Luce, 1971).

POSTPARTUM PERIOD

1. Sleep patterns during the first four postpartum weeks are similar in some respects to the sleep patterns in insomnia (Karacan et al., 1968).
2. The sleep patterns of mothers and infants do not synchronize in the first four postpartum weeks (Luce, 1971).
3. Short sleep time of two to three hours may cause 'sleep hunger' which may affect mother-infant interaction (Rubin, 1961).
4. The amount and quality of sleep obtained in a 24 hour period may affect the mother's ability to provide care for her infant (Robson & Moss, 1976).
5. The sleep patterns of the mother and her infant may begin to synchronize after the fourth postpartum week (Palmer, 1976).

INFANT

1. The sleep patterns of infants are unpredictable during the early weeks of the postpartum period (Deters, 1980).
2. The sleep patterns of infants may begin to adjust to those of mothers around the fourth postpartum week (Palmer, 1976).
3. The sleep periods of infants become longer after the fourth postpartum week (Deters, 1980).

Figure 2.1. Factors which may affect mother-infant sleep patterns and mother-infant interaction.

literature refers primarily to mother or infant sleep. These identified factors served as a guide when examining the data from the interviews for common concerns across subjects.

Summary

The majority of studies on sleep and sleep patterns reported in the literature have focussed on adult populations. Karacan et al. (1968) conducted two studies on sleep cycles in late pregnancy and the postpartum period that showed that women spent more time in light NREM sleep during these times. The only clinical studies on sleep patterns of patients in hospital were carried out in intensive care settings and therefore would seem to have little relevance for this study.

The average amount of sleep obtained by newborns in each 24 hour period has been studied. However, findings are varied and inconclusive with Brazelton (1982) reporting that newborns sleep an average of 17 to 18 hours, while Barnard (1984) reported average sleep to be 13.7 hours. Two researchers (Barnard, 1983; Deters, 1980) have studied mother-infant sleep patterns and their conclusions were mainly confined to the problems that mothers had in trying to understand why their infants' sleep patterns were so different from their own.

Some important concepts relating to mother-infant sleep emerged from the literature review. Prenatal sleep changes were identified that were viewed as being detrimental to the physical and mental well-being of the mother, however, there was no study of the effects of these changes during the postpartum period.

The lack of synchrony in mother-infant sleep patterns was supported

in the literature review. Also, a potential for interference with mother-infant interaction and/or caretaking activities due to sleep loss was addressed by several authors but no research was presented to substantiate this relationship. It was suggested that infant sleep patterns begin to adjust to those of the mother by the fourth postpartum week, but again these statements were not supported by research findings.

Thus, while the literature review provided a background on mother-infant sleep patterns, there appeared to be a lack of confirmatory research to support the identified concepts, suggesting that there is a need for a clinical study which examines such concepts using mother-infant dyads.

CHAPTER III

METHODS

Research Design

This study was an exploratory descriptive one designed to explore the sleep patterns of recently delivered primiparous women and their newborns. Specific relationships that were explored were the length of sleep periods, and sleep interruptions and the quality of mother-infant interaction from the second through fourth postpartum week. Estimates on the length of the infants sleep were based on reports made by the mothers. It is possible, that in some instances, mothers may have assumed that their infants were asleep, when in fact they were awake and quiet.

In a qualitative research design, the treatment of the collected data involves the identification of categories during the process of analysis. These categories, along with other factors, which may influence the mothers perception of sleep will be presented and the results will be described and discussed.

To serve as a basis for viewing the selected sample demographic and social information including the mother's age, occupation and support in the home were obtained to determine whether they had any relationship to the mothers' sleep patterns.

Subjects

The subjects were selected from the practices of two obstetricians. They comprised a convenience sample of nine first-time

mothers who were in the last month of pregnancy when contacted to ask if they would participate in the study. All of the subjects had a normal prenatal period, delivered vaginally at term and had a healthy newborn who was discharged home at the same time as the mother.

None of the women had any history of sleep problems prior to or during pregnancy. All of the subjects had a normal retiring pattern where they usually slept for seven to nine hours during the night. All of the women resided with a male partner who was the only other adult living permanently in the home. However, two of the women had visitors who stayed in the house for several days during the course of the study.

There were five male and four female infants in the study. None of the infants had any complications at birth or during the newborn period. All of the infants were breastfed initially. One mother had changed to formula feeding by the fourth postpartum week but as this was immediately prior to the last interview, the mother-infant dyad was retained in the study.

Further demographic and social characteristics of the subjects are included in the data analysis (Chapter V).

Ethical Considerations

All nine subjects participated voluntarily in the study and each was required to sign a consent form (See Appendix A). The purpose of the study was explained to each woman and it was made clear that she was free to withdraw from the study at any time should she so desire. It was also explained that there would be no difference in any medical treatment offered to those who volunteered or did not volunteer for the

study. A copy of the signed consent form was given to each subject.

The audiotapes containing the recorded interviews were stored in a locked cupboard and when transcription of the tapes was completed, the interview data was erased. Anonymity was assured in that data could not be traced to individuals and names would not appear in the research report or ensuing publications.

Setting

The initial contact with the subjects was made in the prenatal period during a doctor's office visit. One visit was made to each mother during her hospital stay. Three visits to collect data were made in the subject's home following discharge from hospital.

Pilot Study

A pilot study was conducted on two recently confined women to identify modalities that women used to describe the sleep patterns of themselves and their infants. From this pilot study, it appeared that a suitable method of acquiring data on sleep patterns was an unstructured non-directive tape-recorded interview. Thus, this method of data collection was utilized in the major study.

Research Instruments

Three instruments were used to collect data. These were an unstructured non-directive interview, the Nursing Child Assessment Sleep Activity Record (NCASAR) and the Nursing Child Assessment Feeding Scale (NCAFS).

Unstructured Interview

Three broad questions were developed to provide guidance for the subject. The first question was: "How is everything going with you today?" The subject was allowed to respond. If the topic of sleep was not mentioned spontaneously, a second question was asked: "Can you describe what has happened to you and your baby during the past 24 hours?" Following this, the mother was asked: Is this a typical day for you?" The researcher avoided directing the conversation unless the mother started to discuss topics that were unrelated to mother-infant care.

NCASAR Instrument

The NCASAR instrument was developed by Barnard and Eyres (1975) at the University of Washington. It was designed to assist the mother in recording the day and night sleep-wake behavior of her infant. It takes into account her own sleep patterns in relation to her usual bedtime and awakening (See Appendix B). No other instruments for collecting data on sleep patterns were identified in an extensive search of the literature.

NCAFS Instrument

The NCAFS instrument was developed also at the University of Washington. It was administered by the investigator when observing mother-infant interaction during infant feeding (See Appendix C).

The NCAFS tool examines the mother's sensitivity to infant cues; her responses to the infant's distress signals; and her ability to foster social, emotional and cognitive growth of the infant. It also

examines the infant's responses to the mother and the clarity with which the infant sends behavioral cues to the caregiver. Each of these six sub-scales receives a score and a total score of 76 is possible. Barnard and her colleagues have noted that a score of less than 56 indicates that there are areas where mother-infant interaction is less than optimal and cautions nurses that remedial intervention is indicated (Spietz, 1985).

Data Collection

The collection of data took place over a period of three months. At the beginning of the second postpartum week, each mother was contacted by telephone to ascertain willingness to continue participating in the study. An interview appointment was arranged at a time convenient for the woman. All interviews were recorded on audiotapes.

Following the conclusion of the first interview, the subjects were asked to complete the NCASAR tool for each 24 hour period during the time between the first to last interview session, approximately three weeks for each subject. The researcher provided the mothers with a telephone number at which she could be contacted if any concerns or problems arose before the next scheduled interview date. A second interview was arranged and completed during the third postpartum week. The pattern of this interview was identical to that of the initial interview.

The third and final interview was held as close to the end of the fourth postpartum week as was possible. At the completion of this

interview, the researcher observed the mother breast feeding for the purpose of completing the NCAFS tool to score mother-infant interaction. During the observation of four mother-infant dyads, a second researcher was present in order to establish interrater reliability for the use of the tool. This final visit constituted the end of data collection for each subject.

Analysis of Data

Data were analyzed using both qualitative and quantitative methods. The unstructured interviews were subjected to content analysis. Descriptive statistics were employed to analyze the data from the NCASAR and NCAFS intruments.

Unstructured Non-directive Interview

The constant comparative method of analysis was used in this study (Glaser & Strauss, 1967). The researcher does not have pre-conceived categories but generates them from the data as factors pertaining to the research problem are identified (Stern, 1982). As each interview is analyzed the data are compared with previous interviews and the categories are rechecked for completeness and also to ensure that no conflicting information, that would negate a category, has been identified (Glaser & Strauss, 1967). In this study the data from the interviews were examined for similarities in statements by the interviewees which were then coded together to form a number of different categories. For example, the interviews contained repetitive references to "tiredness" of the women during the postpartum period and

a category of "tiredness" emerged.

All of the audiotapes were first transcribed. The transcripts were read for general content and 14 initial categories were developed. Each identified category within the interviews was color coded. Data from each subject were separated and put into category folders. Content for each category was compared across interviews. Some of the initial categories were found to overlap and were amalgamated. The following labels identify the final categories that emerged from the data:

Sleep-wake Patterns of Mothers and Infants

Tiredness

Dependency of Baby

Support

Change in Life-style

Daily Schedule

Mothers' Reactions to Professional Advice

When the coding was completed, a colleague, with expertise in maternal-newborn care and research was provided with the final categories and two uncoded interviews. The data were categorized by this expert to establish interrater agreement. Interrater agreement was calculated for the coding for the two interviews with $r = .85$ and $r = .89$ being achieved respectively. This procedure for establishing interrater agreement in clinical nursing research is recommended by Rubin and Erickson (1978).

Nursing Child Assessment Sleep Activity Record

The sleep activity records for each mother-infant dyad were analyzed to identify the normal sleep patterns of the mothers and the adjustments that occurred in those patterns during the second to fourth postpartum weeks. For each infant, the longest and shortest sleep periods at night and during the total 24 hour period were calculated for the three weeks during which data were collected. The average hours during which each infant slept in 24 hours was calculated on a weekly basis.

A comparison was made of the relationship of the infant's sleep to the mother's normal waking and sleeping hours. The range of interruptions and the mean number of interruptions in the mother's sleep per night was calculated for each week.

Nursing Child Assessment Feeding Scale

The scores obtained by each mother-infant pair during observation of infant feeding were calculated. The scores were compared with the hours of night time sleep recorded on the NCASAR tool. These scores were plotted graphically to determine if a correlation existed between the scores and sleep hours.

Reliability and Validity of Instruments

Unstructured Non-directive Interview

In the unstructured non-directive interview the respondent's views on the topic being researched were identified. The aim of the interview was to obtain a valid interpretation of the topic as

perceived by the respondent. A subjective study (one that focusses on the respondent's perceptions) can be objective in its presentation of reliable factual data (Scriven, 1972).

To ensure that the researcher was not causing bias in subject response, a second experienced researcher and interviewer listened to the tapes from the first interviews and monitored them in order to try to identify instances where the researcher might have influenced subject responses. Periodic checks were made during the study to ensure that data gathering remained objective.

The interviews varied in length from one to two hours as all mothers were encouraged to converse freely about matters of concern regarding themselves and their newborn. The researcher rarely found it necessary to refocus the interview. Thus, in-depth interviews were achieved that yielded rich, comparative data.

Internal coherence is an important criterion of validity in qualitative studies (McCutcheon, 1978). Three criteria can be used to assess internal coherence: (1) there must be sufficient evidence in terms of quality and quantity to support the investigator's interpretation; (2) the interpretation must be shown to be probable, given a knowledge of similar situations; (3) the interpretation must be useful in helping understand the subjects being studied.

In this study the responses of the subjects have been used to develop the analytical categories. The findings have been compared, when possible, with those of other researchers. Thus, the criteria for internal coherence have been addressed.

Nursing Child Assessment Sleep Activity Record

Wenner and Barnard (1979) found the NCASAR tool to be effective for collecting data about sleep patterns of mothers and infants during the first year of the infant's life. The data recorded by the mothers was compared with the information obtained from the observer's interviews. The purpose of this comparison was to verify the validity of the data. Comparing data from two sources is known as triangulation (Zelditch, 1969).

Nursing Child Assessment Feeding Scale

The reliability and validity of the NCAFS instrument has been demonstrated by other researchers. Reliability measures to establish internal consistency using Cronbach's alpha coefficient were based on the data collected by the Nursing Child Assessment Satellite Training Program trainees since 1979 (Barnard, 1983). (The Cronbach's alpha coefficients for parent and infant total scores at one to 11 months were .83 and .73 respectively). The scores on the sub-scales are presented in Table 3.1.

In this study, interrater agreement on the NCAFS instrument was established using the criteria set out by the Nursing Child Assessment Satellite Training Program. The researcher used an independent observer trained in the use of the tool. Both researcher and observer independently scored the same infant feeding. The observation and scoring protocol were carried out on four subjects. The interrater agreement scores for the four visits were .97, .98, .98, .98. The acceptable level of interrater agreement must be at least .85;

Table 3.1

Scores of the Sub-scales of the NCAFS Instrument

Sub-scale	Score	
	Parent	Infant
Sensitivity to cues	.60	
Response to distress	.69	
Social-emotional growth fostering	.63	
Cognitive growth fostering	.69	
Clarity of cues		.56
Responsiveness to parent		.58

therefore, these scores indicated that the researcher was competent in the use of the tool.

The NCAFS instrument has been tested for concurrent, predictive and construct validity (Barnard, 1983). In this study, concurrent validity was the main area of concern as the focus was exploratory and not predictive.

The concurrent validity of the NCAFS instrument was evaluated by administering it to subjects in conjunction with other related scales, the Nursing Child Assessment Teaching Scale and the Home Observation for Measurement of the Environment Scale. There was a strong relationship between the scores obtained on the NCAFS and related measures of mother-infant interaction and stimulation scores obtained on the Home Observation for Measurement of the Environment Scale. The concurrent validity established appeared adequate for this exploratory study.

To establish construct validity of the NCAFS instrument, Barnard's research group carried out a comparison on two groups of infants who were known to be different from each other. One group was made up of infants born at term, the other group was composed of infants born prematurely. The two groups showed significant differences. The probability levels ranged from $p < .05$ to $p < .01$ over the conceptual clusters which formed the sub-scales in the NCAFS instrument. These findings suggest that the feeding scale is sensitive to differences among infants who have different developmental prospects (Barnard, 1983).

Factor analysis was carried out in the NCAFS tool for subjects aged

one to 12 months. For nearly all factors items were drawn from more than one of the six sub-scales with several factors containing items from both the mother and infant sub-scales. This finding suggests that the factors are tapping aspects of contingent responding between the mother and infant (Barnard, 1983).

In this study, the NCAFS tool was used to record mother-infant interaction on one occasion only; therefore, predictive validity was not an issue. As the tool has been shown to measure mother-infant interaction when findings were compared with findings from other tools, it appeared appropriate for use in this study.

In Chapter IV, the findings of the study and discussion of the results will be presented.

CHAPTER IV

FINDINGS

Findings of this study are presented in four sections. The first section describes the demographic and social characteristics of the subjects; the second, an analysis of the mothers' normal sleep patterns, the infants' sleep patterns and the relationship between the mother and infant patterns as outlined in the objectives for the study. The third section is the presentation of the information obtained from content analysis of the interviews. The report of the results of the scores obtained by the subjects on the NCAFS forms the final section of this chapter.

Characteristics of the Subjects

The nine women who participated in this study appeared to be representative of a normal childbearing population. The ages of these women ranged from 21 to 29 years with a mean age of 25.1 years. Three of the women had completed a diploma from technical college or its equivalent as their highest level of education. Two had completed high school and one had achieved only Grade 10 education. Three had completed a university degree. All of the women had worked outside the home prior to pregnancy. Six of the women were employed in office or service related occupations and three occupied professional positions in teaching, nursing and chartered accountancy respectively. Eight of the mothers were Caucasian and one was Asian. Seven of the women were married and two lived in a common-law relationship with the father of

the baby.

The infants were all healthy and born at term. There were five boys and four girls and all were breastfed. The birth weight of the infants ranged from 5 lb. 12 oz. to 9 lb. 13 oz. Table 4.1 summarizes the characteristics of the subjects.

The Normal Sleep Hours of the Mothers

Nine mother-infant dyads were the subjects of this study. Table 4.2 shows the normal sleep hours for each mother and the average number of hours of sleep she required each night prior to pregnancy. The range of hours of sleep required varied from 7.5 to 9.5 hours per night but the modal sleep period was 8 hours. The normal sleep hours for five mothers was 11:00 p.m. to 7 a.m., two mothers slept from 10:30 p.m. to 6:00 a.m., one from 10:30 p.m. to 8:00 a.m. and one (CD) from 2:00 a.m. to 10:00 a.m. CD who was Mary's mother explained that her rather unusual sleep hours were due to the fact that her husband worked until 1:00 a.m.

During the second, third and fourth postpartum weeks the normal sleep hours for five of the woman changed in that they remained in bed for a longer time than they had done prior to the birth of the baby. Four of the women recorded no change in their sleep hours during the first postpartum weeks. The mothers recorded the times that they retired and planned to get up but the total hours of sleep they got during the night was less than their planned sleep due to the interruptions caused by their infants. Table 4.3 shows the changes that occurred in the mothers planned sleep hours. When comparing the

Table 4.1

Characteristics of the Subjects

Mother	Age	Occupation	Birth Weight of Baby	
CA	24	Secretary	James	9 lb. 13 oz.
LB	24	Child Care Worker	Ruth	6 lb. 14 oz.
LC	29	Chartered Accountant	Sarah	6 lb. 3 oz.
CD	25	Postal Worker	Mary	7 lb. 5 oz.
LE	22	Secretary	John	8 lb. 4 oz.
KF	27	Bankteller	Thomas	6 lb. 13 oz.
CG	21	Shop Assistant	Andrew	5 lb. 12 oz.
MH	28	Schoolteacher	Peter	7 lb. 10 oz.
MJ	26	Graduate Student	Elizabeth	6 lb. 9 oz.

Table 4.2

Normal Sleep Hours of Mothers Before Pregnancy

Mother's with Infants' Name	Average Hours of Sleep	Normal Bedtime Hour	Normal Awakening Hour
CA (James)	8.0	11:00	7:00
LB (Ruth)	7.5	10:30	6:00
LC (Sarah)	8.0	11:00	7:00
CD (Mary)	8.0	2:00	10:00
LE (John)	9.5	10:30	8:00
KF (Thomas)	8.0	11:00	7:00
CG (Andrew)	8.5	11:00	7:30
MH (Peter)	8.0	11:00	7:00
MJ (Elizabeth)	7.5	10:30	6:00

Table 4.3

Changes in Sleeping Hour of Mothers from Postpartum Week Two to Four

Mother with Infants' Name	Week Postpartum					
	2		3		4	
	Bedtime	Awakening	Bedtime	Awakening	Bedtime	Awakening
CA (James)	11:00	8:00	11:00	8:00	11:00	8:00 *
LB (Ruth)	10:00	7:00	10:00	7:00	10:00	7:00
LC (Sarah)	11:00	7:00	11:00	7:00	11:00	7:00
CD (Mary)	1:00	10:00	12:00	10:00	1:00	10:00 *
LE (John)	10:00	8:00	10:00	8:00	10:00	9:00 *
KF (Thomas)	11:00	8:00	11:00	8:00	11:00	8:00 *
CG (Andrew)	11:00	7:30	11:00	7:30	11:00	7:30
MH (Peter)	11:00	7:00	11:00	7:00	11:00	7:00
MJ (Elizabeth)	10:30	7:00	11:00	7:30	10:30	7:30 *

* Denotes increase in sleep hours.

data in this table with those of Table 4.2, it can be seen that the changes that occurred in sleep hours were slight ranging from 30 to 90 minutes increased sleep time.

Longest/Shortest Night Sleep Hours for Infants

The data presented in Table 4.4 represent the longest and shortest number of consecutive hours that the infants slept in a 24 hour period over each of the three recorded weeks. For seven of the infants a slight increase in the longest sleep period occurred by the fourth postpartum week; the exceptions were Mary and Elizabeth who showed a slight decrease in the longest sleep period. The length of the shortest sleep period increased by the third week for six of the infants but in week four the sleep periods for all infants were erratic, with no pattern, demonstrating how unpredictable the sleep patterns of infants are during the first weeks of life.

Longest/Shortest Overall Sleep Hours of Infants

Table 4.4 shows that only five of the infants had increased their longest overall sleep hours by the fourth week. Ruth and Mary had fairly constant total sleep hours for weeks two through four. Thomas and Elizabeth had a slight decrease in the longest hours of sleep by the fourth week. However, Thomas had the most constant sleep hours. The shortest overall hours of sleep were extremely variable for all of the infants with only Ruth and Elizabeth having any appreciable increase in the fourth week.

Table 4.4

Longest/Shortest Night Sleep and Longest/Shortest Sleep in 24 Hours for Infants During Two to Four Postpartum Weeks

Infant with Mother's Initials	Night		Overall	
	Longest	Shortest	Longest	Shortest
James (CA)				
Week 2	4.00 hr	15 min	4.24 hr	15 min
Week 3	4.50 hr	30 min	4.50 hr	30 min
Week 4	6.75 hr	30 min	6.75 hr	20 min
Ruth (LB)				
Week 2	5.50 hr	30 min	5.50 hr	30 min
Week 3	5.25 hr	2 hrs	5.25 hr	30 min
Week 4	5.50 hr	2 hrs	5.50 hrs	1 hr
Sarah (LC)				
Week 2	5.00 hr	30 min	5.00 hr	30 min
Week 3	6.00 hr	1 hr	6.00 hr	1 hr
Week 4	6.00 hr	45 min	6.00 hr	30 min
Mary (CD)				
Week 2	5.50 hr	30 min	5.50 hr	15 min
Week 3	5.25 hr	1.75 hr	5.25 hr	15 min
Week 4	5.25 hr	1 hr	5.25 hr	30 min
John (LE)				
Week 2	3.75 hr	15 min	4.00 hr	15 min
Week 3	5.00 hr	30 min	5.00 hr	30 min
Week 4	6.00 hr	30 min	6.00 hr	30 min
Thomas (KF)				
Week 2	7.50 hr	30 min	7.50 hr	30 min
Week 3	6.50 hr	45 min	6.50 hr	45 min
Week 4	7.00 hr	1 hr	7.00 hr	45 min
Andrew (CG)				
Week 2	4.00 hr	1 hr	4.00 hr	45 min
Week 3	5.00 hr	30 min	5.00 hr	30 min
Week 4	5.00 hr	45 min	5.00 hr	45 min
Peter (MH)				
Week 2	6.00 hr	30 min	6.00 hr	30 min
Week 3	6.25 hr	15 min	6.25 hr	15 min
Week 4	6.50 hr	30 min	6.50 hr	30 min
Elizabeth (MJ)				
Week 2	4.00 hr	30 min	4.00 hr	15 min
Week 3	4.25 hr	15 min	4.25 hr	15 min
Week 4	4.00 hr	2.25 hr	4.00 hr	1 hr

Total Average Hours of Sleep in 24 Hours for Individual Infants

Seven of the infants increased their total average sleep in 24 hours by the fourth postpartum week. For two infants (James and Thomas) the total average sleep remained constant showing little variation from week two to four. However, there was variation in the changes observed in individual infants from week two to week three. The range of sleep hours varied from a loss of 2.1 hours to a gain of 1.7 hours (Table 4.5) in the 24 hour period.

Daytime Sleep Patterns

The percentage of time the infant slept when the mother was awake is shown in Table 4.6. The percentage of time that the infants slept during the mothers waking hours remained reasonably constant over the three week period. For example, James slept 42 percent, 44 percent and 40 percent of his mother's (CA) waking hours. In general, the infants who slept for shorter periods compared to others in the group during the second week tended to sleep longer in the third week, with the converse being true for longer sleeping infants. Peter was an exception to the normal; however, data collected in the fourth week for Peter are based on a three day recording and this may account for the observed difference. Data for Elizabeth also are based on a three day recording during the fourth postpartum week.

Nighttime Sleep Patterns

The percentage of the time the infant slept during the mother's normal sleep time is shown in Table 4.6. The amount of time each infant slept ranged from a low of 58% to a high of 99% of the mother's

Table 4.5

Total Average Hours of Sleep in 24 Hours for Individual Infants During Postpartum Weeks Two to Four

Infant with Mother's Initials	Week 2 Hours	Week 3 Hours	Week 4 Hours
James (CA)	12.2	12.5	12.2
Ruth (LB)	15.4	14.9	17.4
Sarah (LC)	15.0	15.8	17.2
Mary (CD)	12.9	13.9	14.0
John (LE)	11.2	12.9	14.4
Thomas (KF)	14.3	14.5	14.5
Andrew (CG)	14.6	14.8	17.0
Peter (MH)	16.1	13.9	17.4
Elizabeth (MJ)	15.1	14.6	16.5

Table 4.6

Percentage of Day and Night Sleep for Each Infant in Relation to Mothers' Normal Waking and Sleeping Hours in Postpartum Week Two to Four

Infant with Mother's Initials	Mother's Waking Hours	Percentage** of Time Infant Slept in Daytime			Mother's Sleeping Hours	Percentage** of Time Infant Slept at Night		
		Week 2 %	Week 3 %	Week 4 %		Week 2 %	Week 3 %	Week 4 %
James (CA)	16.0	42	44	40	8.0	69	68	73
Ruth (LB)	16.0	58	51	63	8.0	76	84	93
Sarah (LC)	16.0	59	62	66	8.0	69	74	84
Mary (CD)	16.0	48	49	45	8.0	65	75	84
John (LE)	14.5	39	35	37	9.5	58	82	96
Thomas (KF)	16.0	47	50	46	8.0	85	81	90
Andrew (CG)	15.5	48	48	61	8.5	85	86	88
Peter (MH)	16.0	51	39	69	8.0	99	96	80
Elizabeth (MJ)	16.0	64	51	69	8.0	61	67	69

** Rounded to nearest whole figure.

Table 4.7

Interruptions in Night Sleep Patterns for Mother-Infant Dyads in the Second to Fourth Postpartum Week

Mother-Infant Dyad by Infants' Name and Mother's Initials	Postpartum Week					
	2 Interruptions		3 Interruptions		4 Interruptions	
	Range	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$
James (CA)	2-5	3.00	2-4	2.85	1-3	2.00
Ruth (LB)	2-4	2.40	2-3	2.28	1-2	1.75
Sarah (LC)	1-3	2.14	1-2	1.42	1-2	1.28
Mary (CD)	2-3	2.40	2-4	2.40	1-2	1.75
John (LE)	2-4	2.85	2-4	2.85	1-4	2.42
Thomas (KF)	1-2	1.57	1-3	1.57	1-2	1.75
Andrew (CG)	2-3	2.71	2-3	2.57	2-3	2.20
Peter (MH)	1-3	1.71	1-3	1.71	1-2	1.66
Elizabeth (MJ)	1-3	2.00	1-3	1.85	1-2	1.50

normal sleep time. During the second week the amount of sleep obtained by the infants during the mother's normal night sleep hours ranged from a low of 58% (John) to a high of 99% (Peter). In the third week the range varied from 68% (James) to 96% (Peter). Eight of the infants increased their total amount of night sleep by the fourth postpartum week. The exception to this finding was Peter, who showed a decrease in the percentage of night sleep time from 99% in the second week to 80% in the fourth week. However, Peter showed greater increase in the daytime sleep hours than any other infant during the fourth week.

Interruptions in Night Sleep Patterns for Mother-Infant Dyads in the Second Through Fourth Postpartum Week

Some infants had a relatively long sleep period; that is, over four hours at least once in the second week. The mean number of interruptions per week for each infant averaged from 1.57 (Thomas) to 3.00 (James). The range of interruptions per night varied from one to five. By the fourth week the mean number of interruptions had decreased for all infants except Thomas. The mean interruption rate varied from 1.28 (Sarah) to 2.42 (John). The range of interruptions per night varied from one to four (John) but the majority of the infants had a range of one to two in this week (Table 4.7). It appeared that by the fourth week both the actual number of maternal sleep interruptions caused by the needs of the infants and the mean number of interruptions had decreased for all infants except Thomas, who had had a low mean number of interruptions since birth.

Analysis of Interviews

The subjective data from all interviews is presented in the seven categories that emerged from the content analysis of the data. Representative quotations from the interviews are used to illustrate each category. When the researcher asked the question: "How is everything going with you today?", all but one mother, commented without prompting, on their feelings of tiredness. In fact, it was the first response that the eight women gave to this initial question. The theme of tiredness in the postpartum period was therefore initiated by the women rather than by the researcher. The one exception, LC, responded to the initial question by saying: "So far, so good." However, when the researcher asked? "Can you tell me what has happened to you and your baby during the past 24 hours?", LC expressed concerns about tiredness that were similar to those of the other mothers. These initial responses tended to set the focus for the mother's description of her day and led to the development of seven behavioral categories which were: 1. sleep-wake patterns of mother's and infants; 2. tiredness; 3. the dependency of the baby; 4. support; 5. change in life-style; 6. daily schedule; and 7. mothers' reactions to professional advice. Sub-categories are included within three of the major categories as these sub-categories help to clarify the parameters of the major category.

Sleep-Wake Patterns of Mothers and Infants

All subjects in this study reported that their usual sleep-wake patterns had been disrupted as a result of the unpredictable sleep-wake

patterns of their infants. While most of the women recognized that their previous sleep-wake patterns would be altered they were not prepared for the magnitude of the changes they experienced in the first postpartum weeks. Several sub-categories emerged from the interview data on sleep-wake patterns and they will be presented in this section.

Sleep as a priority. While the women in the study saw sleep as a necessity for their physical and mental well-being, they were of the opinion that it was difficult to obtain with a baby in the home. Each of the women spoke of disruptions and interruptions in her nighttime sleep patterns that led to reduction in her sleep hours. To combat this sleep loss most of the women had developed a diversity of coping mechanisms. The coping mechanisms developed by the subjects will be described.

Three of the mothers gained a few hours of rest by taking the baby to bed with them after completing the early morning feeding. This practice enabled them to rest and to know that the baby was safe and warm; the baby often fell asleep in bed. Two of the mothers planned their day either to sleep late in the morning or to take a nap in the afternoon when the baby was asleep. Three mothers got up early in the morning, did their housework and then tried to keep the baby awake for longer periods during the day in the hope that they would obtain longer sleep periods at night. One mother made a habit of taking a short nap whenever she could. She called this a 'power snooze', as when she awakened, she felt really good and equated it with being as beneficial to her physically as six hours of nighttime sleep. While most of the women stated that these extra hours helped to combat their feelings of

physical tiredness, they still did not feel totally refreshed as they felt emotionally drained.

Mothers' perceptions of changes in their sleep patterns. Most of the woman perceived that the greatest change in their sleep patterns was the reduction in the number of hours of continuous sleep during the night. Although eight of the nine women stated that they found the frequent interruptions in their sleep hours very disruptive and tiring, most of them were able to get back to sleep quickly after they had fed their infants. In fact, four of the women stated that they frequently fell asleep while the baby was nursing.

Only one mother said that her baby slept well during the night. This mother obtained four hours of continuous sleep each night during the second postpartum week and was sleeping for seven hours at a time by the fourth postpartum week. Although this mother stated that her baby had become used to this sleep pattern, she still looked forward to the time when she would be able to 'turn off' at night for eight to nine hours of continuous sleep.

One problem for five of the subjects was listening "for every sound made by the baby." These women thought that they only slept lightly because they were afraid that something might happen to the baby if they slept too soundly. It appeared that that there was an element of threat attached to the baby's awakening as these mothers stated that they slept with one eye and one ear open in case they did not hear the infant cry. This type of sleep resembles stage two of the five stages of sleep in which the individual can be aroused easily. As the restoration of physical and mental energy occurs in stage four, and

since the women did not appear to reach stage four sleep, it can be postulated that these women were lacking the deep stage of sleep, necessary for physical and mental restoration. One mother said, "I think I still dread falling asleep at night, knowing I will be wakened shortly." Although she acknowledged that "life is not going to be a perfect routine now that I have a baby to care for, I know that I will not always be in bed and asleep by 10:30 p.m."

Thus, it appeared that mothers tried to rationalize and balance the threat of being awakened with the knowledge that being awakened was inevitable if they were going to provide around the clock care for their offspring. Another mother, in the hope that she would get more sleep, attempted to delay her baby's last feed until 11:30 p.m. She rationalized that this strategy would enable her to obtain at least six hours of sleep before being awakened for morning feeding. This plan was only partially successful, because her son frequently awakened at 3:00 a.m. after less than four hours of sleep. Nevertheless, she was content with her plan as she felt that she had, at least, some control over her sleep pattern.

Another subject, CG, had anticipated that her baby would sleep all day and be awake for most of the night because her sisters had told her that this pattern was the normal one for a newborn. She was pleasantly surprised when, during the first postpartum weeks, her son slept for an average of four hours each night. As a result, she found that she obtained more sleep than anticipated.

The above descriptions of mothers' perceptions of their sleep patterns serve to illustrate how the sleep patterns of newborns may

disrupt those of mothers in the first postpartum weeks. It is possible that when a mother has one bad night, it may alter her perception of the amount of sleep disruption she is experiencing. For example, KF reported that her infant was sleeping well during the third postpartum week and her sleep disruption was minimal. However, in the fourth week, she stated that her son had been awake for most of one night, and went on to say that she now thought his sleep pattern was erratic. From this comment it can be noted that this mother based perceptions of sleep patterns on the night to night patterns of her infant.

From the interview data on sleep patterns of the mothers, it was concluded that during the initial postpartum period, a mother's sleep may be disrupted by the awakening of her infant for feeding and also by her fear of not hearing the baby while in a deep sleep. Thus, it is probable that the womens' perceptions of the sleep they are experiencing may be related to feeling tired and that frequent interruptions of their sleep may change their perceptions to the extent that they report more disruptions than are actually occurring.

Mothers' perceptions of the sleep patterns of their infants. All subjects had little understanding of their infants sleep patterns. While most of the women had done some reading in this area, most of them were of the opinion that babies slept for 18 hours in a 24 hour period and had no conception of how erratic the sleep patterns of the newborn could be in the first postpartum weeks. Over half of the women stated that they did expect some alterations in their own sleep patterns due to the demands of the baby, but they were not prepared for the extent of changes that occurred. One mother, who had previously

slept for eight hours every night, could not believe that the longest sleep she had obtained since coming home from hospital had been four and a half hours. She stated, "I need my sleep to be able to function, if I had known that I would get so little sleep now . . . I might have thought more carefully about becoming a mother." Another mother stated: "My baby's sleep patterns are so unpredictable that I don't know what to do for the best, I take him into bed to feed him, but I am so tired that I worry about rolling over and falling asleep while he is still feeding."

Eight of the women stated that they were obtaining less sleep than they normally required due to their baby's irregular nighttime sleep patterns. The length of their infant's sleep periods before awakening to feed varied from 30 minutes to four and one half hours. Only one mother, CG, indicated that her baby's sleep pattern was not affecting her normal sleeping hours. She stated that, on the average, he slept for four to five hours at a stretch, was then fed, and went back to sleep for another three to four hours. However, on several occasions, the baby had slept for seven hours during the night. This mother's perceptions of sleep patterns are interesting, as previously she had considered that eight to nine hours of continuous sleep was her normal pattern. Based on the foregoing examples it would appear that the sleep patterns of newborns do affect the sleep patterns of mothers. To prepare women for these disruptions in their sleep patterns, it is evident new mothers require more information on the individuality of infants' sleep patterns.

Two mothers, CA and LB, stated that when they used the NCASAR to

chart their infant's sleep-wake cycles they learned to recognize and understand their sleep patterns. Thus, it would appear that mothers' could use the NCASAR as a means of recognizing their infants' sleep cycles and try to use the information to adjust their own sleep needs to fit in with the infants' sleep-wake patterns.

Tiredness

All of the women reported feelings of tiredness during the first postpartum weeks. These feelings were most evident in the first three weeks following birth and became less of a concern to the mothers by the fourth week. From the womens' comments, it appeared that while changes in their sleep patterns caused a loss in the number of hours of sleep and led to feelings of tiredness, it is possible that the actual physical demands of providing care for an infant on a 24 hour basis contributed to tiredness as much as sleep loss per se. While all of the women spoke about physical tiredness, six also described emotional tiredness. Thus the category of tiredness will be presented under these sub-headings.

Physical tiredness. During the initial interviews all of the women stated that they felt so physically tired that they wondered how long they could go on before reaching the point of exhaustion. Most of them had expected to feel tired but did not realize how tired they would be. Six of the women stated that physical tiredness led to a loss of energy which left them so drained that they were unable to carry out household tasks, prepare meals or, on several occasions, to care for the baby.

One mother commented on being so tired that she thought of weaning her infant so that her husband could take over the nighttime feedings. Another mother felt so exhausted she told her husband that if she did not get some rest she would sell her son for adoption. She also stated to her son: "James, I am so tired and I need some sleep as much as you do . . . if you don't settle down, you will ruin a good marriage." After saying this, she left the baby crying, shut herself in the bedroom and cried herself to sleep from sheer exhaustion. When she awakened, she discovered that her husband had called his mother, who had come over to take care of the baby for the next 24 hours. Then she felt guilty about abandoning her baby but she also felt this solution had preserved her sanity. Four mothers took the baby into bed with them, as they felt it was the safest place to be if they fell asleep while feeding.

Another problem in relation to physical tiredness was a restriction in the number of social contacts experienced by the mothers. While five of them were visited and supported by their own mothers, they did not encourage friends to visit as they felt too tired to entertain. Most of the women felt isolated as they stated that they lacked peer group contact which they had previously enjoyed.

At the second interview, six mothers stated that the feeling of physical tiredness was not as great as it had been initially. However, physical tiredness was still a problem when the women had unsettled nights due to the fussiness of their infants. Eight mothers now felt that they were becoming more used to caring for the baby and were beginning to organize their daily routine more efficiently. Four

mothers stated that they had learned to pay attention to what their body told them in relation to energy levels. They carried out the household tasks they could cope with depending on how tired they were on a particular day. The mothers who tried to organize the daily schedule around the baby's needs made fewer comments about feeling tired than those who attempted to organize the infant's daily schedule around their own. Also the women who planned the day to include catnaps or short periods of sleep in between the baby's feeding schedule stated that they felt restored, refreshed and energetic following the rest.

During the final interviews, the mothers still complained of being physically tired and four thought that their feelings of tiredness had increased from the previous interviews, but not to the same extent as during the week of the initial interviews. Again the explanation for tiredness focussed on the baby's demands, as most of the women stated that the baby had been fussier and required to be fed more frequently. These comments serve to verify that babies are more demanding and therefore require more attention during the second growth spurt (4-5 weeks of age).

Emotional tiredness. Four of the six mothers who spoke of both physical and emotional tiredness stated that physical tiredness could be resolved by obtaining several hours of natural, uninterrupted sleep. Emotional tiredness, however, could not be overcome so easily. Even when the mothers felt physically restored by sleep, the feeling of emotional tiredness persisted and was related to the responsibilities of providing continuous care for the infant.

LB, for example, stated:

> I feel really tired emotionally, it is a different feeling from being physically tired . . . I am very unhappy and if something goes wrong, it really bothers me and I just can't cope with anything . . . whereas, when I am physically tired . . . I just drag but can cope with household tasks and caring for the baby.

Another mother, LC, stated: "I think my tiredness is mainly physical, but frequently I feel emotionally drained as well. On these occasions, I am mentally fatigued even when I have slept well." A third mother, CD, described her feelings of emotional tiredness as follows:

> I am so frustrated, I do not know what to do to get rid of this kind of tiredness . . . I feel at the end of my rope, I get so upset and I know that this affects the baby . . . . When I feel emotionally drained, I just have to go into another room and I sit there crying while the baby cries in her crib . . . after about 30 minutes, I feel less frustrated, I can go back into the baby's room and attend to her needs . . . however, I feel frustrated and am short tempered with both the baby and my husband.

Feelings of emotional tiredness interfered with LE's ability to provide care for her infant:

> I am so drained emotionally that I have no physical energy to look after John . . . . I sit down to feed him and I fall asleep all the time . . . I have to force myself to stay awake.

Finally, MJ commented that when she was emotionally tired she could not cope with the demands of the baby. She stated:

> When I feel emotionally tired, I just let Elizabeth cry in the hope that she will tire herself out and go to sleep . . . I don't feel good about doing this . . . I sit and cry, then I get mad at myself . . . eventually I will pick her up but it

takes a lot of effort when I am feeling so drained and exhausted.

These mothers appeared to be more stressed than those who complained only of physical tiredness. It is possible that emotional tiredness, combined with physical tiredness, makes coping with the infants' demands more difficult. In summary, it would appear that the disruptions in the mothers' normal sleeping hours were caused by the demands of the infants. The mothers realized that providing care for a newborn was a fulltime occupation, however, they were quite unprepared for the impact that a dependent offspring created in their daily routine.

The Dependency of the Baby

It was evident that the needs of most of the infants exceeded their mothers' abilities to meet them. The most common concern was the need to constantly care for a dependent infant.

One mother, CA, was overwhelmed with the responsibility of having another human being so dependent on her for all of his needs. "I have to think and do everything for two of us." "He [James] is so dependent on me when I am giving him his bath, I am scared I might hurt him." John's mother, LE was afraid to leave the house with him: "He needs me all the time, he gets upset so easily and I find it hard to console him, people will think I am a bad mother." A third mother, CG also related dependency to crying but realized that this was normal and tried to give all of her attention to Andrew when he was upset. Another mother (MH) found her baby's dependency hardest to cope with

when he cried unconsolably with gas pains: "I know he is dependent on me, but what can I do to help him? . . . I don't know."

In complete contrast to these mothers' reactions, LB accepted Ruth's dependency stating: "It is wonderful to have someone so dependent to care for . . ." She continued: "I let Ruth be the boss and use my motherly instincts." KF also commented on the dependency of Thomas: "Everything has to be done for him." However, she was less accepting of this dependency than LB as she stated: "He tries to test me out . . . when he does this, I give him a scolding . . . and he will quieten down."

One mother (MJ) was quite amazed that her baby was so dependent on her for all her care but, nevertheless, stated that she was always in control and that her daughter was not controlling her life. CD reacted to the dependency of Mary in the following way: "Even when you are at your wit's end, you must get on with life and do the best you can for the little one." The ninth mother (LC) was the only one who did not mention dependency. She was concerned that Sarah required care for 24 hours a day but noted that this was now her job so that she had to make the best of this situation.

In summary, the mothers' who spoke of the dependency of the baby varied considerably in their reactions. Most of them knew that the baby would be dependent on them for care. However, they were quite unprepared for the responsibility that this dependency entailed. The women who received most support from husbands, friends and relatives appeared to be less overwhelmed by the dependency of their baby.

Support

The women who talked about support defined it as the help and encouragement given to them in the first postpartum weeks. Eight mothers mentioned the importance of the support they received from others. The women's perceptions of the adequacy of support differed depending on the source, the amount, and whether it was offered spontaneously or requested when needed. The major themes in relation to support were help with infant care, assistance with household tasks, and having someone to talk to when things were not going well.

Three of the mothers, LB, MH, and MJ, appeared to receive most support from their husbands who would willingly carry out household tasks without being asked. These husbands assisted with infant care at all times and especially during the night. LB stated:

> My husband will do anything for Ruth, he gets up in the middle of the night, changes the baby and brings her to me for feeding. I don't have to ask him for help, he takes responsibility for her care . . . he is a good father.

MH had nothing but praise for her husband:

> He does so much to help me, I don't think I could cope without his assistance . . . he hears Peter crying when I am still asleep, and even if he is not due to be fed, he will get up and sit and cuddle Peter for an hour or more until he settles.

MJ also stated that her husband was very willing to assist with all aspects of care and she felt that he was at his best when attending to the needs of his daughter.

The husbands of two other mothers, (CA and LC) awakened when the baby cried in the night, but their response was to waken their wives to

attend to the baby's needs and promptly go back to sleep. However, CA did acknowledge that during the day her husband would assist in caring for James when she was at a loss as to how to console a fussing baby and attend to household chores. This husband's assistance was not observed by the investigator, as on the days of the interviews, James had fussy periods and CA's husband stayed out on the sundeck while his wife became more harassed as she tried to console the baby and answer questions. It is possible that CA's husband was too uncomfortable to assist with baby care in the presence of a stranger.

Another mother, LC had no support as her husband did nothing to help her and she had no family in this country. She accepted this situation stating: "If I have to breastfeed every few hours I might as well do all the care as well." She was of the opinion that support would be a good thing but as her husband was often away on business trips she could not expect him to help her on the occasions when he was at home. It is probable that LC's role expectations for her husband were that she saw him as providing financial support rather than sharing the responsibilities of child care.

Both CD and CG were appreciative of the help provided by their partners. While they received no help at night, they both had husbands who would do household chores, prepare meals and assist with infant care during the day. KF stated that she got a great deal of support from her husband who was eager to take an equal role in caring for Thomas. However, when questioned about such care, she did not identify the tasks with which she received assistance.

One mother, LE, did not comment on the importance of support. She

stated that her husband occasionally prepared a meal but gave no assistance to her in caring for John. This mother stated: "It gets lonely and tiring to be in the house day after day with no other person to talk to or to help me with baby care . . . I think I would be less stressed if I had someone to help me. She felt that the ideal support would be to have someone else in the house during the first weeks to assist with baby care, household tasks and the preparation of meals.

Three of the women stated that, without the support of their mothers, they did not know how they would have been able to cope in the first two postpartum weeks. Each one saw this type of support as being essential and were thankful that all they had to do during this time was to feed the baby and try to obtain some rest and sleep. Two of the mothers spoke of the support given by La Leche League, a group of mothers who give assistance and advice about breast feeding. Both of these women stated that no matter how late it was, or how trivial their concerns might be, the La Leche League member was always available to put their minds at rest in relation to questions on infant feeding and sleep patterns. One of these mothers attended several League meetings and was reassured to find that other mothers were having identical problems in adjusting to life with a baby in the home.

Two women thought that the best support for first-time mothers would be helpful neighbours. One of the mothers stated that if neighbours would bring dishes of food so that she did not have to bother about organizing meals, she could then give all of her attention to meeting the needs of her baby. The other mother thought that a "help group" of neighbours who had gone through the experience of

coping with meeting the needs of an infant in the first postpartum weeks would be the most useful support. One mother mentioned the support of the instructor who had taught the prenatal classes that she attended. She stated that this instructor was an excellent resource person who could be contacted at any time if she had concerns about herself or her baby.

Only one woman spoke of the visit by the Community Health Nurse. She did not find this visit too helpful or informative and stated that perhaps it was expected that mothers should not ask too many questions about infant care as any concerns she had were not answered.

All the mothers were of the opinion that support from others was essential to their well-being. However, seven of the nine women actually indicated that they received support. Despite references to support, all mothers felt that the amount of support they received was inadequate in assisting them to cope with the changes in life-style that caring for a new baby brings, The mother who had no support, and the mother who did not comment on the importance of support obviously felt the need for advice and assistance from others. On several occasions both of these women called the investigator at home to ask questions about their own physical needs and the erratic sleep-wake patterns of their infants.

All subjects were emphatic that some form of support should be available to new mothers without their having to ask for it. The mothers perceived support as taking many forms. It could be the presence of a caring person, words of encouragement, assistance with household tasks and infant care, or just having someone to talk with

when they were feeling low. As one mother aptly stated:

> It is essential to be able to tell somebody about your problems . . . and to know that this person understands how you are feeling as each day brings new relevations as to what a mother must learn to do when caring for her baby.

Support is essential to new mothers as they adapt to the changes in life-style that occur as a result of the demands that caring for a baby entail.

Changes in Life-style

All women commented on the tremendous differences in their daily activities that resulted from being a mother. They all knew that changes in life-style would occur and had tried to prepare themselves for this inevitable event by reading literature on the subject or by talking with friends who were parents. Six of the women, however, stated they were not prepared for the extent of the changes, especially in relation to daily routine and loss of freedom. Five of the women were concerned about the loss of independence in that they were now tied to the house and could no longer go out to the stores or visit friends whenever they wanted to. They all felt that lack of social contact was a problem and that it was one of the changes which required most adjustment.

Seven of the women stated that being a mother had caused a change in the relationship with their partner. Most indicated that their partners realized that change was bound to occur but they felt that none of the men were prepared for the degree of disruption. One mother, CA, felt that the change in her relationship with her husband

was so great that she wondered if they had done the right thing in having a baby. She stated: "It's such a commitment . . . I am so lonely and ~~I am~~ craving affection . . . in fact I require it more than ever now, but my husband feels that he should not disturb me when I am with the baby so much." Another mother, CD, was concerned that she was spending so much time with her daughter that her husband felt that he was being left out of the relationship, resulting in differences of opinion between them which made her angry and upset. Similar emotions were also expressed by LE who had problems in controlling her feelings of anger when trying to explain to her husband why his evening meal was not ready when he came home from work. Similarly CG stated that she was frequently moody and depressed and often thought that her husband was mad at her because she spent so much time with the baby.

The other three mothers had a hard time dealing with the change in their relationships with their husbands caused by the lack of time for sharing conversations and meals and just being together. However, they had talked things over with their husbands and were trying to establish new working relationships perceived as essential for strengthening the family unit.

Two women, LB and LC, did not comment on a change in relationship with their partners. LB did acknowledge that her life-style had changed and that caring for a baby was a very demanding job; her husband, however, was of the opinion that as long as she was caring for their daughter, he was quite happy, and he knew that this was the most important thing in life at the present time. While LC talked about change in life-style, she was concerned about her inability to

contribute to the family's financial situation. She stated: "I am no longer bringing in a salary and this is the greatest concern I have . . . it costs a lot to buy things for the baby . . . I just hope we can manage on one pay cheque." She was quite open in her conversation in that changes had occurred since Sarah had arrived on the scene but was unwilling to identify specific changes when questioned.

The mothers' statements about changes in life-style reflect the impact that baby care brings to the lives of parents. While most of the comments were indicative of the adjustments that must be made, some reflected that it was difficult to accept the change in relationship with their spouses.

In general, mothers who could talk things over with their partners appeared to be more successful in dealing with the changes that occurred. All of the women were accepting of the changes and tried to organize their lives in relation to adapting to the stated changes. Often these changes caused adjustment to daily routine.

Daily Schedule

Most of the mothers expressed concern that their baby's schedule was so unpredictable that they had difficulty in organizing their daily routine. While some of the women stated that since the baby's arrival there was "no such thing as a daily schedule," all were emphatic that they tried to fit their daily activities around the needs of the baby. It was evident, however that each mother had developed coping strategies to assist in organizing a schedule around the baby's needs. Five of the women had decided that when the baby was a little older

they were going to change the daily schedule by attempting to fit the baby into their daily routine as they thought that this would allow them to do more chores around the house and give them more time to attend to their needs of shopping and socializing with their friends.

One mother, CA, was of the opinion that caring for James was a 24 hour a day job that left no time for doing anything else. Occasionally she tried to carry out household chores but found that she was too tired to accomplish such tasks. She stated: "No two days are the same in James' schedule . . . , so how can I plan a daily routine? . . . , I think he has the days and nights confused and I must try to change this around so that I can begin to organize my daily routine." It was apparent that she was despondent about the demands that the baby made on her life and hoped that by the time he was two months old she might be able to organize his schedule to give her time to accomplish some of the tasks around the house.

A different approach was employed by LB. She was very organized and planned her daily schedule by compiling a list of chores to be done each day. She carried out the planned tasks whenever she had time, usually in between Ruth's feedings, and as each tasks was completed she crossed it off the list. LB stated:

> I see myself as a 'high striver' and a 'very organized person' . . . because of these attributes, I find no problem in organizing my day around the baby's. The best time of the day is the early morning when Ruth is asleep . . . I tidy up the mess from the previous evening, and prepare the evening meal as I know there will be no time to do these chores later in the day . . . I do not worry if the house is not spotless . . . it just looks as if there is a baby in the home.

In contrast to CA, this mother was content to take each day as it came and thought that there would be plenty of time in the future to begin planning her days so that Ruth would fit into her daily schedule.

MH had adopted the same type of plan as LB in organizing her daily schedule. She had experimented with planning her day and had found that the early morning was the ideal time of day to catch up on household chores. However, by early afternoon any plans she had organized were usually changed as this was Peter's time for being fussy and requiring her attention. MH was not upset by this state of affairs but did think that she would attempt to change Peter's daily schedule after the first weeks so that each day would be organized in relation to her needs rather than those of her infant. As MH was a teacher, this background may have accounted for her desire to make Peter conform to her routine when he was little older.

Two of the mothers, LC and CG, had little to say about their daily schedule except that the unpredictability of the baby's schedule made it difficult to organize any daily routine. LC stated: "All of my time is taken up attending to Sarah's needs . . . I have to close my eyes to the chaos in the house . . . even when baby is asleep I can't get anything done . . . I'm just too tired." On the other hand CG was quite happy with the disorganization that existed in the household. It did not worry her that often she was not showered by lunch-time. She stated: "I like to go shopping with the baby . . . I can leave all the household chores to my husband . . . he gets around to tidying up eventually."

LE and KF were of the opinion that there was no daily schedule in

their lives at present. However, when questioned about daily activities, they both stated that they tried to organize the household tasks around the baby's schedule. LE's main concerns were related to finding enough time and energy to do the laundry and prepare meals. She stated:

> I do try to get things done when John is asleep . . . but I feel that no matter how much work I do, I don't seem to accomplish much . . . I would like to have more rest and enough energy to go out once in a while.

In contrast to LE, KF stated: "I know there are chores to be done but I never find the time to do them, the baby demands all my attention, I try to fit my day around his . . . I am happy with this arrangement at present." Although KF stated she was fitting into the baby's schedule, the reverse appeared to be true, as she had organized her day on a schedule that catered to her needs; she wakened her son at a set time for his bath, and would not allow him to sleep more than four hours between feeds.

Two of the women were not concerned about the unpredictability in the baby's schedule. They both accepted that disorganized daily routines were inevitable when caring for a baby in the early postpartum weeks. CD though that it was quite impossible to be a good mother and a good housekeeper at the same time. She stated: "I have never been great at doing housework . . . I try to rearrange the dust and sweep it under the carpet at least once a week . . . as long as the baby is fed and clean, that is all I worry about." CD was relaxed and happy with this situation for the present and was quite content to take things on

a minute to minute basis as she perceived this plan to be the easiest way to meet both her own and her infant's needs. MJ saw herself as organizing the daily schedule of the household tasks around the gaps in the time between feeding Elizabeth. She stated: "I know what time I have, and I can accomplish a great deal of work in those free hours . . . it is just a matter of organizing what is to be done during my disorganized day."

In summary, the women who tried to establish a daily routine around the baby's schedule appeared to be more successful in organizing some sort of daily pattern to accomplish household tasks. Many of the women indicated that information from health professionals about life in general and advice about how to recognize daily changes would have been beneficial to them.

Mothers' Reactions to Professional Advice

All subjects commented on the paucity of professional advice about changes that would occur in their lives during the early postpartum weeks. From the advice that was received, two main categories emerged: helpful advice and unhelpful advice.

Two of the women, CA and KF, stated that they did obtain some information regarding life-style changes at prenatal clases but they were given no advice by the nursing staff during their hospital stay. A third woman, MH, stated that she received no information on baby care while in hospital. However, she thought that this was due to the fact that both she and her baby were healthy and needed little assistance. She commented: "I did not like to ask questions . . . the nurses were

always so busy, and if you had any concerns, you had to rush down to the nursery to talk with them."

LB did receive information from the nursing staff but stated:

> I was given advice when I did not need it and was not given it when I required it . . . I was made to feel that I had to follow a routine and do my best to fit baby into this routine . . . I had a lot of frustrations . . . I did not know whether I should follow their [nurses] advice or do what I thought best.

She acknowledged that not all of the nurses acted in this way; some were helpful and these were the ones that she turned to for help when she had a problem.

> I just waited till the nurses who responded well to me and my baby came on duty . . . I asked them questions . . . they were really good and shared a lot of advice about baby care and my own needs.
> These nurses would come and sit by my bed without asking . . . I think new mothers need a lot more of this one-to-one relationship when learning to be a good mother.

Another mother, LC, was concerned that the nursing staff expected her to know that babies do not sleep at regular times. She felt that if this kind of information had been presented at prenatal classes, she would have been less anxious about it in hospital and would not have had to question the nurses who seemed to be unwilling to assist her when she asked for information on baby care. On the other hand, CG stated that the nursing staff were very helpful in providing information on baby care including bathing, burping, changing diapers and breastfeeding. However, she felt that although she was given advice on these aspects of baby care, it was hard for her to remember

all that she was told as she was tired from her delivery. She thought that the above information should have been given when her husband was present so that he could share it with her when she was discharged from hospital.

The remaining three women stated that they did receive advice on baby care and their own needs. However, much of the advice was conflicting so was not seen as being helpful. LE was told that it was important to get as much rest as she could to conserve her energy, but was also told she would get little time to rest as she would be up 24 hours a day attending to her baby's needs. CD was of the opinion that too many nurses came into her room and said different things about the same topics. She also felt that the timing of the advice offered was inappropriate:

> The first day after delivery is not the time to give advice to a new mother . . . I was not ready to listen . . . it went in one ear and out the other . . . even when I did ask a question, I was told, don't ask me, go to that nurse over there.

MJ stated that advice from the nursing staff was mainly on breastfeeding. She was told that there were lectures on nutrition, and postpartum exercises but these were scheduled at certain times and usually coincided with her baby's feeding time so she never managed to attend. She felt that most of the information received was quite confusing but with her nursing background she was able to differentiate the good from the bad and frequently did what she thought was best for her baby and herself.

Finally, all mothers would have liked some advice on the sleep-wake

patterns of newborns so that they would have been prepared for the resultant changes that occurred in their own sleep cycles. Unfortunately, only one subject was given any information on this topic and it was merely a reference to the fact that she should know that babies do not sleep at regular times.

Relationship of NCAFS Scores to Mother-Infant Night Sleep Hours

The researcher observed the mother-infant interaction during a feeding period in the fourth postpartum week. To ensure interrater agreement, a colleague skilled in administering the NCAFS tool observed and scored the mother-infant interaction on four of the dyads. The interrater percentage agreement scores obtained for the four pairs were 97, 98, 98 and 98 respectively. The results of the scores obtained during the observations of the mother-infant interactions are presented in Table 4.8. The highest possible score that can be attained during an interaction is 76. The scores obtained by the mother-infant dyads ranged from a high of 70 to a low of 50. It is interesting to note that the four highest scores for mother-infant interaction were those of the women who seemed to be highly anxious about their capabilities in providing care for their infants as observed by the investigator during the interviews. The lowest score was attained by the mother who was the youngest in the sample and who appeared to be the least concerned about whether she was providing adequate care for her baby.

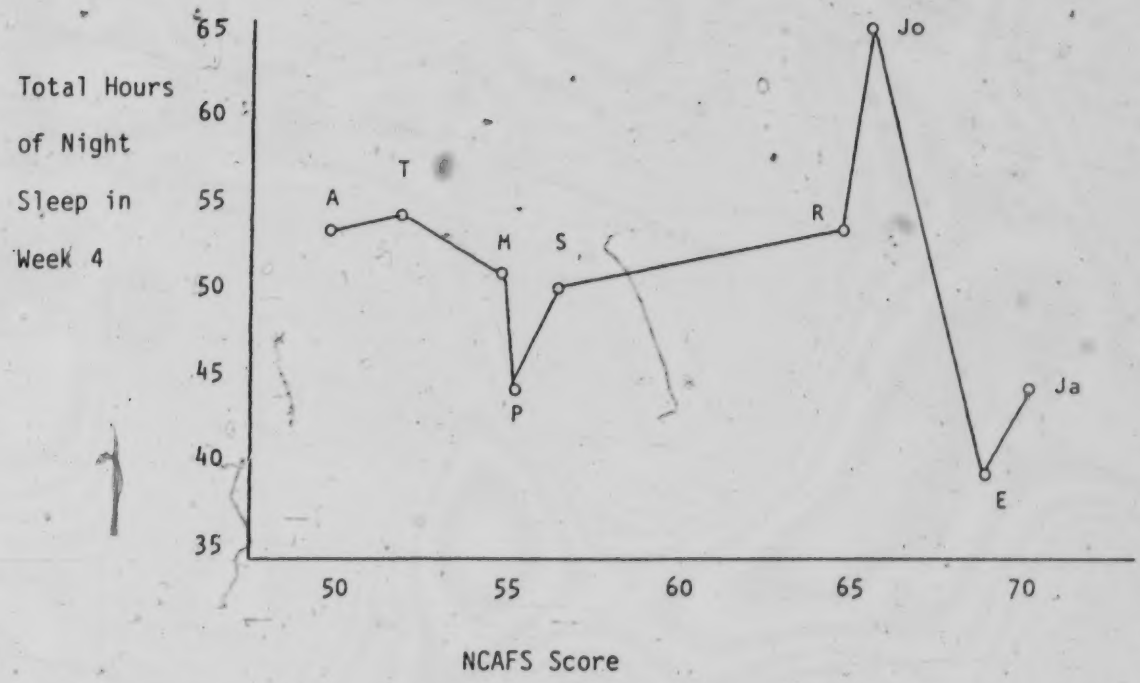
Figure 4.1 depicts a graphic representation of the NCAFS interaction scores and the total hours of night sleep obtained by the

Table 4.8

Mother-Infant Interaction as Measured by NCAFS Tool
During a Feeding Time in Fourth Postpartum Week

Mother-Infant Dyad Infants/Mother's Initials	NCAFS Score**
James (CA)	70
Ruth (LB)	65
Sarah (LC)	57
Mary (CD)	56
John (LE)	66
Thomas (KF)	53
Andrew (CG)	50
Peter (MH)	56
Elizabeth (MJ)	68
	$\bar{X}$ = 60

** Possible Score 76.



A=Andrew; T=Thomas; M=Mary; P=Peter; S=Sarah; R=Ruth;
Jo=John; E=Elizabeth; Ja=James

Figure 4.1. Relationship of NCAFS scores to mother-infant total hours of night sleep in fourth postpartum week

mothers in the fourth postpartum week. It appears that there was no consistent relationship between the NCAFS and the weekly total night sleep hours. The mother with the highest NCAFS score had the least hours of night sleep, the mother with the second highest score had one of the greatest number of hours of night sleep. Conversely, the mother who had the lowest NCAFS score had the highest number of hours of night sleep. These results indicate that the quality of mother-infant interaction was not related in any consistent way to the hours of night sleep obtained by the subjects. However, Barnard and her colleagues have noted that a score of less than 56 indicates that there are areas where mother-infant interaction is less than optimal and cautions that closer investigation of such scores is indicated (Spietz, 1985).

CHAPTER V

DISCUSSION, CONCLUSIONS, LIMITATIONS AND IMPLICATIONS FOR NURSING

The purpose of this study was to describe the sleep patterns of mothers and infants from the second through fourth postpartum weeks. This chapter contains the discussion, conclusions and the limitations of the study. Implications for nursing practice, education and research are also explored.

The research objectives that guided this study were as follows:

1. to describe the sleep patterns of mothers and their infants from the second through fourth postpartum week;
2. to describe the relationships between the sleep patterns of the mother and her infant during this time; and
3. to examine the quality of mother-infant interaction in relation to the changes that may have occurred in the mother's sleep patterns in the second through fourth postpartum week.

The Subjects

The ages of the subjects ranged from 21 to 29 years with a mean of 25.1 and their levels of educational attainment ranged from Grade 10 to graduate preparation. Occupations ranged from blue collar to professional. All the women lived in a stable relationship with the father of the baby. The babies were healthy and born at term with birthweights ranging from 5 lb. 12 oz. to 9 lb. 13 oz.; and the sex distribution was five males and four females. Thus, the characteristics of the infants fall within the dimensions that could be

anticipated in a normal newborn population (Myles, 1981).

Sleep Patterns of the Mothers

Before pregnancy, the sleep patterns of the mothers ranged from 7.5 to 9.5 hours of night sleep, the mode was 8 hours per night. None of the women had any history of sleep problems and all stated that they felt refreshed after these amounts of sleep. During the second through fourth postpartum weeks six women reported that they went to bed at the same time of night as prior to pregnancy. One subject went to bed later than usual but got up later in the morning. Five of the nine spent longer in bed in the mornings and took naps during the day. However, none of the nine women obtained as many hours of continuous sleep as they had previously.

All women reported interruptions in their sleep patterns caused by the demands of their infants. During the second postpartum week the number of interruptions varied from one to five per night. By the fourth week, seven mothers reported a decrease in the number of interruptions; the other two mothers experienced little change in the number of interruptions in their night sleep hours.

Regardless of how many hours of sleep the women obtained, they were all of the opinion that the quality of their sleep had changed. They felt less rested and all complained of feelings of tiredness which they equated as much with having to get up to attend to the needs of their infants as with an actual reduction in their total sleep hours. These feelings of tiredness can also be attributed to a lack of deep sleep, the type necessary for physical and mental restoration (Hartman, 1973;

Snyder, 1969). Five women stated that they were afraid to go into a deep sleep in case they would not hear the baby cry. Thus, it was concluded that the responsibility of caring for an infant added to the mothers' feelings of tiredness. While the women had anticipated that they would experience disruptions in their sleep patterns, the degree of disruption, the amount of tiredness they reported, and the resulting changes in life-style were of greater magnitude than expected.

Sleep Patterns of the Infants

The study was based on the mothers' perceptions of their infants' sleep patterns. There may be errors in the mothers' reporting as a quiet, awake baby might not be observed by the mother and would be reported as being asleep.

Throughout postpartum weeks two to four, the mothers' perceptions of the sleep patterns of their infants indicated that these were unpredictable. Although seven of the nine infants appeared to have increased their longest night sleep period by the fourth week, their sleep periods were still reported as erratic. Only five infants were reported to have increased their total 24 hour sleep period by this time. The shortest sleep periods described by the mothers lengthened in the third week for six of the infants. However, by the fourth week mothers indicated that their infants still had no established sleep patterns. Seven mothers commented on this unpredictability as they had expected to see a more orderly pattern by this time. In the fourth week six of the women reported that their babies had been much fussier, difficult to settle and fed more frequently than during the first three

weeks. The NCASAR charts kept by the mothers confirmed these verbal reports. A possible explanation for this continued erratic infant behavior could be the second growth spurt that babies experience at about four to five weeks after birth (Slattery, 1977). During the growth spurt infants are more demanding, sleep less and are more difficult to console.

These findings of unpredictable sleep patterns are supported by Luce (1971) and Deters (1980) who postulated that the sleep patterns of infants are not predictable in the first four postpartum weeks. These findings are contrary to those of Palmer (1976) who stated that the sleep patterns of infants become more predictable and begin to adjust to those of the mother by the fourth postpartum week.

Relationship Between the Sleep Patterns of the Mother and Her Infant

A major finding of this study suggests that there is no relationship between the sleep patterns of the mother and her infant during the first four weeks of the postpartum period. This finding is substantiated by Barnard (1978) who reported that mothers were frequently perplexed by the fact that their infants had sleep patterns that were different from their own. Luce (1971) and Deters (1980) postulated that the reason for differences in sleep patterns was lack of synchrony in the circadian rhythms of the mother-infant dyad. A study by Hellbrugge (1964) indicated that newborns do in fact have innate circadian rhythms but these are undeveloped and do not begin to resemble those of adults until after the fourth week of life. After this time the infant's sleep-wake patterns begin to adapt to those of

other family members.

Therefore, based on the findings of this study and on the literature reviewed on mother-infant sleep patterns, it would appear that the effect of circadian rhythms on infant sleep patterns requires further investigation. In the meantime, the information available about sleep patterns of circadian rhythms should be shared with parents. Nurses are in an ideal position to discuss with mothers and fathers of newborns, how a newborn's sleep cycles differ from those of adults and how the phenomenon of the circadian rhythm can affect the sleep-wake cycles of infants in the first postpartum weeks. Such information conveyed to parents during the prenatal and early postpartum period could assist them in understanding the differences between their own sleep patterns and those of their infants.

If mothers have a better understanding of their infants behavior it will lead to more realistic expectations, in this case of the sleep-wake cycles of their infants. It has been demonstrated that when mothers have more realistic expectations they cope more adequately with the transition to motherhood (Ahmadi, 1985).

A second important finding regarding mother-infant sleep patterns pertained to the manner in which the mothers were fitting together their own sleep patterns with those of their infants. Five women stated that they were going to try to change their infants sleep-wake cycles to fit into their daily routine. Each of these women stated that at present they were content to allow the baby to follow its own sleep pattern; however two of them were already attempting to organize the baby's daily schedule around their own needs. This plan was not

successful as these two mothers appeared to be more anxious and frustrated and complained of greater feelings of physical tiredness than the women who accepted that in the first postpartum weeks it was the baby's schedule that dictated how each 24 hour period was organized.

A further point for discussion about mother-infant sleep patterns relates to the mothers' perceptions of changes in their sleep patterns brought about by the demands of their infants. All women reported that they slept less during the night than they had prior to the birth of their babies. The NCASAR data supports these descriptions to a limited degree as only two women reported a reduction in the total hours of night sleep. However, the actual hours of sleep for each of the women was episodic since all reported varying numbers of interruptions during the night hours. Analysis of the NCASAR showed that women who commented on "bad nights" with few hours of sleep might only have had one "bad night" out of six or seven.

The sleep disturbances that occurred were related to the needs of the infants; thus, it is possible that these disruptions may have distorted the mothers' perceptions of the sleep loss they were experiencing. While the mothers' feelings of tiredness appeared to be linked to the provision of continuous infant care they attempted to rationalize their tiredness in terms of disturbances either in, or through loss of, sleep hours. Errante (1985) postulated that women adjusting to the demands of motherhood will receive less sleep than they were accustomed to prior to pregnancy. However, she further states that while reduction in sleep hours has been reported by new mothers, it is probable that the interruptions in total sleep hours are

more difficult to adjust to than the actual loss of sleep. The findings from this study of mothers' perceptions in changes in their sleep patterns serve to substantiate those of Errante.

Physical and Emotional Tiredness

Six of the subjects differentiated between physical and emotional tiredness. Such differentiation has not been described in the literature. In relation to physical tiredness, all the women accepted that the tiredness they were experiencing was a normal part of being a new mother. However, while they expected to be tired, they were quite unprepared for the degree of tiredness which they felt. Each mother was frequently overwhelmed by feelings of tiredness and was often despairing and wondering how to cope with the responsibility of caring for a baby 24 hours a day when lacking the energy to carry out care. The women stated that feelings of physical tiredness could be alleviated by obtaining three to four hours of natural, uninterrupted sleep.

The women who described emotional tiredness stated that this type of tiredness persisted and could not be resolved easily, even when they had slept for several hours. They reported that emotional tiredness resulted from anxiety caused by feelings of responsibility for providing constant care for the baby. Though these women complained of loss of sleep, they did not feel that this decreased sleep was the primary reason for feeling emotionally tired.

The mothers did not relate support to their feelings of tiredness; however, the researcher observed that the mothers who received most

support from husbands and relatives commented less on feeling both physically and emotionally tired than did other subjects. These observations suggest that nurses could have an important role to play in ensuring that mothers have adequate support systems in place to assist them with caretaking tasks during the early postpartum weeks.

In summary, two types of tiredness, physical and emotional were reported by the mothers. The mothers were unprepared for both the degree of tiredness they experienced and the responsibility entailed in caring for an infant 24 hours a day. Support from others in the home setting appeared to influence the womens' perceptions of tiredness. Investigation of the relationship between support and feelings of physical and emotional tiredness would be of value to nurses and provide information that could be used to determine the most effective health care strategies needed to promote rest and encourage adaptive emotional adjustment. Further study also requires to be undertaken to identify whether lack of sleep is the main reason for feelings of physical and emotional tiredness or whether the responsibility of constantly caring for an infant is the critical variable as suggested by the findings of this study.

Support

The mothers perceived support, that is the help and encouragement given them by others, as critical in their adaptation to motherhood. Several women stated that they could not have coped with caring for the baby 24 hours a day without support. The women were of the opinion that when feeling tired and exhausted, it was essential to have a

support person to carry out household chores such as laundry, preparing meals and even changing diapers. Support did not influence the womens' perceptions of tiredness but those women who received most support from husbands and relatives appeared to be less tired regardless of the number of interruptions in their night sleep.

In summary, support is essential for women in the early postpartum period. Nurses could assist in providing support by establishing groups composed of both health professionals and women with previous parenting experience. A demonstration group could be set up having a 24-hour telephone referral service where mothers could obtain help and support when they find themselves overwhelmed by the demands of their new role. This project would need to be evaluated for its effectiveness in assisting mothers.

Changes in Life-style

The mothers reported three major changes in life-style: 1. a change in relationship with their partners; 2. the loss of freedom and social contact; and 3. the dependency of the infant.

Change in relationship with partner. Seven women spoke of the change in relationship as being the most pervasive and the most difficult to accept. This change affected their ability to adapt to motherhood and to cope with emotional problems. Gruis (1977) observed that alteration in life-style and husband-wife relationships to accommodate a new family member is one of four tasks that all new mothers must accomplish.

Loss of freedom and social contact. The second change perceived by

the women as critical to their life-style was the loss of freedom and social contact. Restrictions of their activities led to feelings of frustration and resentment that occasionally interfered with caretaking tasks.

Dependency of the infant. Five women had no previous experience in caring for newborns. The other four subjects had either worked with babies or taken care of relatives infants. While eight women realized that the baby would be dependent on them for care, they were quite unprepared for the responsibility this entailed.

Adams (1963) stated: "Our modern society provides few opportunities for women to learn about infant care through their own experience before they become parents" (p. 72). She found that only 25 percent of primiparas had previous experience in taking care of an infant and not on a continuous 24 hour basis. Numerous studies have identified the dependency of the infant as a major concern of primiparous mothers. Thus, teaching in prenatal classes and in hospital should be directed towards assisting mothers to learn about changes in life-style that affect marital relationships.

Professional Advice

Little information was provided by health professionals regarding any of the topics that were identified as being important to the mothers. Differences in mother-infant sleep wake patterns were not addressed in prenatal classes or in the hospital. The issues of infant care and changes in life-style were dealt with only briefly in prenatal classes. Most women recalled having been given varying amounts of

information on baby care during their hospital stay, but they were of the opinion that the advice was conflicting, confusing and difficult to remember once they were home. The information given fell into two categories: helpful and unhelpful. It seemed to fall into these divisions whether it had been requested by the mother or offered by the nursing staff. These findings support those of an English study of postpartum care conducted by Ball (1982), who reported that conflicting advice from nursing staff was a complaint expressed by over one third of the mothers in the study.

Relationship of Findings to the General Systems Model

The general systems approach (von Bertalanffy, 1968) can be used to explain the findings of this study. In this approach, human beings are viewed as open systems who exchange energy or information with the environment and with each other. In this study, mothers and infants were viewed as individual open systems who exchanged energy and information with each other during caretaking activities. They also exchanged energy and information with other adults who formed part of the larger external system (Figure 1.1, p. 7).

The findings can be interpreted in terms of the dimensions of the systems model which have just been described. The mothers received input into their systems in two ways. First, the needs of the newborns created demands on the mothers' energy levels during caretaking activities. The second type of input was generative, restoring energy to the system, when mothers received support from their partners or friends, relatives or health professionals. When the demands created

by the infants exceeded the support provided from the external system the mothers appeared to suffer from an energy loss which manifested itself in an inability to cope with caretaking activities and signs of emotional tiredness. When energy exchange between systems was disordered or unavailable a state of entropy developed, energy was not converted to a useable form and resulted in a slowing down of the system. It is probable that lack of support caused an over expenditure of energy to occur in postpartum mothers with resulting complaints of tiredness.

The output of the maternal system was the way that the mothers coped and responded to the demands of their infants and their ability to perform household chores. When the mothers' systems were slowed down and they were tired, the mothers' showed increased anxiety and stress. Their coping abilities were also decreased and this was manifested by a lack of ability to carry out household tasks, prepare meals, or occasionally, to provide adequate care for the baby.

When two systems interact with one another and information is exchanged, external feedback is generated between the two systems. The way that infants responded to their mothers' caretaking activities constituted one form of external feedback to the maternal system. This feedback could cause additional demands on the mothers' system or it could provide positive feedback and be classified as supportive to the system. For example, when the infants were difficult to console or slept only short periods between feedings, negative feedback was created and appeared to diminish the mothers' ability to cope with the demands of their infants. However, one mother, whose infant slept

better than she had anticipated used this behavior as positive feedback, thus increasing her ability to cope with her infant's needs.

Conclusions

The purpose of this study was to describe the sleep patterns of mothers and their infants during the second through fourth postpartum weeks. The specific objectives were to describe the relationship between the sleep patterns of the mother and her infant during this time and to examine the quality of mother-infant interaction in relation to changes that may have occurred in the mother's sleep patterns. The following conclusions are based on the findings of this study. It would be inappropriate to generalize from these findings given the small sample size, that the sample was one of convenience and that all subjects participated voluntarily in the study.

1. The initial premise that mother-infant sleep patterns are not compatible was supported. While incompatibility between mother and infant sleep patterns caused reduction in the total night sleep hours obtained by the mothers, the number of interruptions experienced was of greater concern to the mothers than actual loss of sleep.

2. The mothers experienced a greater degree of tiredness than they had anticipated. Tiredness was described in two ways, physical and emotional. While physical tiredness could be relieved by three to four hours of uninterrupted sleep, emotional tiredness could not be so easily overcome and was related to the responsibility of caring for the infant 24 hours a day.

3. Support from partners and significant others was critical to

the mothers in assisting them to cope with the responsibilities of motherhood. The mothers who received most support commented less about being tired regardless of the number of interruptions in night sleep.

4. Care-taking activities were affected by interruptions in sleep hours. For example, mothers frequently nursed babies in bed because they were afraid of falling asleep while sitting in a chair to feed.

5. The NCAFS scores were not influenced by the changes in the mothers' sleep patterns. Mothers who had less sleep and frequent interruptions scored as highly on the mother-infant interaction as those who reported fewer interruptions.

6. The use of the NCASAR tool did assist mothers in understanding the sleep-wake cycles of their infants and also helped the mothers to realize that newborns have sleep patterns very different from their own. This tool demonstrated that while infants night sleep hours began to increase by the fourth postpartum week, the actual sleep patterns remained unpredictable.

7. Mothers who organized the daily schedule around the infant seemed to cope more effectively than those who tried to fit the infant into their schedule.

8. Mothers perceived professional advice to be inadequate in relation to sleep-wake cycles of newborns, feeding schedules, changes in life style and assistance on how to adjust and adapt to being a mother.

Limitations

The subjects chosen for this study may be viewed as an atypical

group of mothers because of the method of selection of subjects. They were a convenience sample of first-time mothers from two doctors' practices. As a result, the findings are representative only of the nine subjects. Therefore no generalization or inferences may be made to any other group.

A further limitation of this study is the small sample size. A third limitation is the research design. Collecting data over a longer time period, for example, for six to eight weeks following childbirth would have provided additional information on the sleep patterns of the mother-infant dyads. This data could then have been compared with the literature which suggests that the sleep patterns of infants may begin to adjust to those of the mothers after this time (Palmer, 1976; Deters, 1980).

Implications

The study has implications for nursing practice and education as well as implications for further research.

Nursing Practice

Nurses and health professionals in both community and hospital settings need to be more aware of the degrees of tiredness that mothers experience when providing care 24 hours a day for a dependent infant. Nurses have to be vigilant and accurate in assessment of mothers for signs of excess fatigue caused by reduction in sleep and interruptions in night sleep. If nurses become practiced in detecting signs of fatigue they could intervene earlier. It is probable that with such

intervention 'sleep hunger' could be prevented. 'Sleep hunger' is a condition which may contribute to the development of postpartum depression and other psychogenic disorders (Errante, 1985).

If nurses are aware of the difficulties encountered by mothers due to changes in their sleep patterns they will be able to provide anticipatory guidance. The purpose of such guidance would be to decrease the mothers' anxiety levels. Anxiety arises from two sources, the first is the womens' perceptions of their inability to cope with the demands of their infants. The second source is the loss of and interruption in their night sleep hours and a lack of support in adjusting to motherhood.

Public health nurses, when they visit in the home are in a position to assist mothers in planning their daily activities to fit in with their infants sleep-wake cycles. Nurses could encourage women in both the prenatal and the postpartum periods to seek help in the home before they become overwhelmed by the responsiblity of providing care for their infants which can lead to both physical and emotional tiredness. Health professionals could be instrumental in organizing 'support groups' composed of nurses and women who have been through the postpartum experience. These groups could assist new mothers with their problems by providing a 24 hour a day 'crisis line' where the mothers could call to obtain factual, reliable information and support in the areas of personal needs, infant feeding, care problems and family relationships.

Nurses who are proficient in the use of the NCASAR tool could teach mothers how to record the sleep-wake behaviors of their newborns, to

provide them with a better understanding of the differences between sleep patterns of infants and adults. Armed with this knowledge, mothers would be less puzzled about their infants' sleep patterns and could learn to organize daily routines around the sleep-wake cycles of their infants.

Nurses, in both the hospital and the community must take a closer look at the information they give to mothers during the postpartum period. This information has to be reliable, factual and comprehended by the mothers. There is no justification for providing anxious and concerned mothers with information that is often confusing, conflicting and difficult to understand. New mothers are burdened sufficiently by the responsibilities that a new baby brings into their lives and do not need any further difficulties. Nurses should include husbands and other support persons in discussions on infant care as mothers are frequently tired and do not hear or cannot recall what has been said to them about caring for and meeting the needs of their infants. Finally, nurses are in a position to discuss with mothers how an infant's circadian rhythm differs from an adult's and how this phenomenon may affect the sleep-wake behaviors of the newest family member.

Nursing Education

Concepts related to mother-infant sleep patterns and the problems encountered by mothers as a result of changes and interruptions in their sleep hours should be included in basic nursing curricula, as the instigation of nursing measures to diminish sleep deprivation during the early postpartum weeks falls within the domain of nursing

practice. Nurses in hospital and community health settings need to be knowledgeable about the sleep patterns of newborns and how these may affect the mothers' ability to organize their daily schedules. As interest in the sleep patterns of newborns is a relatively new area in the nursing literature, the provision of continuing education for nurses on this topic is essential.

Nursing Research

Further investigation is required in the area of mother-infant sleep patterns in the postpartum period. It is important to know if the findings of this study are generalizable to the postpartum population as a whole. A modified replication of this study, using a larger sample and a longer time frame (6-8 weeks) could provide further insight into the problem of tiredness experienced by women. An increase in sample size, and inclusion of subjects from a greater catchment area would allow generalization of the findings.

More research is needed to determine the most effective ways of promoting optimum rest and sleep, therefore minimizing maternal sleep deprivation in the early postpartum weeks. Further investigation in relation to the causes and manifestations of physical and emotional tiredness in postpartum women is recommended. Further knowledge of mother-infant relationships might be gained through study of circadian rhythms of both mothers and infants. At present there are no research findings that explore the relationship between circadian rhythms and mother-infant interaction.

Summary

The findings of this study illustrate the unpredictability of infant sleep-wake patterns from the second through fourth postpartum week. It is possible that mothers do not have much less sleep in a 24 hour time period than they had prior to delivery. However, the number of interruptions may preclude the potential for the deep, restorative type of sleep necessary for physical and mental restoration in the early postpartum weeks.

Tiredness may be differentiated into two categories, physical and emotional. Physical tiredness can be alleviated by several hours of natural sleep and by daytime rest periods. Emotional tiredness persists despite strategies to overcome the condition. It is probable that emotional tiredness may be related to the stress of providing care for the dependent newborn on a 24 hour a day basis rather than to actual sleep loss. It is possible that emotional tiredness may lead to postpartum depression if allowed to continue. Therefore, nursing interventions to relieve this type of tiredness need to be tested. They may include the need for initiating 'support groups' in the community and provision of support in the home.

The mothers in this study indicated that health professionals did not provide them with enough information that was helpful in assisting them to adjust to the role of motherhood. The women did acknowledge that some information was given prenatally but found it hard to recall when questioned. It is probable that the information given was not internalised by the women as during the prenatal period parents tend to

focus on the impending labor and delivery experience. There was some evidence of conflicting advice being provided during the postpartum period. Finally, it would appear that mothers require further information on sleep-wake cycles on mother-infant dyads and the adjustment to be made in life-styles when a newborn enters the family.

BIBLIOGRAPHY

BIBLIOGRAPHY

Adams, M. (1963). Early concerns of primigravida mothers regarding infant care activities. Nursing Research, 12(2), 72-77.

Ahmadi, K.S. (1985). The experience of being hospitalized: stress, social support and satisfaction. International Journal of Nursing, 22(2), 137-148.

Ball, J. (1982). Stress and the postnatal care of women. Nursing Times, 78(45), 1904-1907.

Barnard, K.E. (1978). Nursing Child Assessment Feeding Scales. Nursing Child Assessment Satellite Training. University of Washington, Seattle, (mimeographed).

Barnard, K.E. (1983). Measurement: validity. American Journal of Maternal-Child Nursing, 7, 1965.

Barnard, K.E. (1984). Sleep behavior of infants: is it important? Nursing Child Assessment Satellite Training. University of Washington, Seattle, (mimeographed).

Barnard, K.E., & Eyres, S.J. (1975). The Seattle study: an overview. In K.E. Baranard, H.J. Douglas (Eds.), Child health assessment, part 1: a literature review. Bethesda, Maryland: U.S. Department of Health, Education and Welfare.

Berger, R.J. (1969). The sleep and dream cycle. In A. Kales (Ed.), Sleep: physiology and pathology: a symposium. Philadephia: J.B. Lippincott Company.

Bertalanffy, L. von. (1968). General systems theory. New York: George Braziller Inc.

Brazelton, T.B. (1972). Infants and mothers: differences and development. New York: Delta Books.

Brazelton, T.B. (1982). Joint regulation of neonate-parent behavior. In E.Z. Tronick (Ed.), Social interchange in infancy: affect, cognition and communication. Baltimore: University Park Press.

Bruyn, S. (1981). The human perspective in sociology: the methodology of participant observation. Englewood Cliffs, New Jersey: Prentice Hall, Inc.

Bull, M.J. (1981). Changes in concerns of first-time mothers after one week at home. Journal of Obstetrical, Gynecological and Neonatal Nursing, 5, 391-394.

Dement, W.C. (1972). Some must watch while some must sleep. San Francisco: W.H. Freeman and Company.

Dement, W.C., & Kleitman, N. (1957). Cyclic variations in EEG during sleep and their relation to eye movements, body motility and dreaming. Journal of Experimental Psychology, 53, 339-348.

Desmond, M.M. (1976). The transitional care nursery. Pediatric Clinics of North America, 23, 651.

Deters, G.E. (1980). Circadian rhythm phenomenon. American Journal of Maternal Child-Nursing, 5, 249-251.

Dickoff, J., James, P., & Wiedenbach, E. (1968). Theory in a practice discipline, part 1: practice oriented theory. Nursing Research, 17, 415-435.

Diers, D. (1979). Research in nursing practice. Philadelphia: J.B. Lippincott Company.

Errante, J. (1985). Sleep deprivation or postpartum blues? Topics in Clinical Nursing, 6(4), 9-18.

Freemon, F. (1972). Sleep research: a critical review. Springfield, Ill.: Charles C. Thomas, Publisher.

Glaser, B.G. (1969). The constant comparative method of qualitative analysis. In G. McCall & J.L. Simmons (Eds.), Issues in participant observation: a text and reader. Menlo Park, Calif.: Addison Wesley Publishing Company.

Glaser, B.G., & Strauss, A.L. (1967). The discovery of grounded theory: strategies for qualitative research. Chicago: Aldine Publishing Company.

Goodwin, L.D., & Prescott, L.D. (1981). Issues and approaches to estimating interrater reliability in nursing research. Research in Nursing and Health, 4, 323-337.

Grubb, C.A. (1980). Perceptions of time by multiparous women in relation to themselves and others during the first postpartal month. Maternal-Child Nursing Journal, 9, 225-333.

Gruis, M. (1977). Beyond maternity: postpartum concerns of mothers. American Journal of Maternal-Child Nursing, 2(3), 182-188.

Hall, A.D., & Fagan, R.E. (1968). Definition of a system. In W. Buckley (Ed.), Modern systems research for the behavioral scientist. Chicago: Aldine Publishing Company.

Haslam, P. (1970). Noise in hospitals: its effect on the patient. Nursing Clinics of North America, 5, 715-724.

Hartman, E. (1973). The function of sleep. New Haven, Conn.: Yale University Press.

Hayter, J. (1980). The rhythm of sleep. American Journal of Nursing, 80, 457-461.

Hellbrugge, T. (1964). Circadian periodicity of physiological functions in different stages of infancy and childhood. Annals of New York Academy of Science, 177, 361-373.

Hilton, B.A. (1976). Quantity and quality of patients' sleep and sleep-disturbing factors in a respiratory intensive care unit. Journal of Advanced Nursing, 1, 453-468.

Karacan, I., Heine, W., Agnes, H., Williams, R., Webb, W., & Ross, J. (1968). Characteristics of sleep patterns during late pregnancy and the postpartum periods. American Journal of Obstetrics and Gynecology, 101, 579-585.

Kerlinger, F.N. (1973). Foundations of behavioral research, (2nd ed.). New York: Holt, Rhinehart and Winston, Inc.

Kleitman, N. (1963). Sleep and wakefulness. Chicago: The University of Chicago Press.

Kornfield, D. (1971). Psychiatric problems of an intensive care unit. Medical Clinics of North America, 55, 1353-1363.

Luce, C.G. (1971). Body time: physiological rhythms and social stress. New York: Random House, Inc.

McCutcheon, G. (1978). On the interpretation of classroom observation. A paper presented at the Annual Meeting of the American Educational Research Association, Toronto.

Meltzoff, A., & Moore, M. (1977). Imitation of facial and manual gestures by human neonates. Science, 75, 198-200.

Mercer, R. (1981). The nurse and maternal tasks of early postpartum.

Maternal-Child Nursing Journal, 6(2), 341-345.

Moughton, M., & Hazzard, M. (1972). An overview of systems theory. Nursing Clinics of North America, 7(3), 385-393.

Murray, E. (1965). Sleep, dreams and arousal. New York: Meredith Publishing Company.

Myles, M.F. (1981). A textbook for midwives, (9th ed.). Edinburgh: Churchill Livingstone.

Norris, C.M. (1983). Concept clarification in nursing. Rockville, Maryland: Aspen Systems Corporation.

Palmer, J.D. (1976). An introduction to biological rhythms. New York: Academic Press.

Parmalee, A.H., Wenner, W.H., & Schultz, H.R. (1964). Infant sleep patterns: from birth to 16 weeks of age. Journal of Pediatrics, 65, 576-582.

Polit, D., & Hungler, B. (1978). Nursing research: principles and methods. Toronto: J.B. Lippincott.

Robson, K., & Moss, H. (1976). Patterns and determinants of maternal attachment. Journal of Pediatrics, 83, 976-984.

Rogers, M.E. (1970). An introduction to the theoretical basis of nursing. Philadelphia: F.A. Davis Company.

Rubin, R. (1961). Basic maternal behavior. Nursing Outlook, 9, 683-686.

Rubin, R. (1975). Maternal tasks in pregnancy. Maternal-Child Nursing Journal, 4(3), 143-153.

Rubin, R. (1984). Maternal identity and the maternal experience. New York: Springer Publishing Company.

Rubin, R., & Erickson, F. (1978). Research in clinical nursing. Journal of Advanced Nursing, 3(2), 131-144.

Scriven, M. (1972). Objectivity and subjectivity in educational research: In L.G. Thomas (Ed.), Philosophical direction of educational research: the 71st Yearbook of the National Society for the Study of Education. Chicago: University Press.

Slattery, J.S. (1977). Nutrition for the normal infant. American Journal of Maternal-Child Nursing, 2(2), 105-108.

Smoyak, S.A. (1969). Toward understanding nursing situations: a transactional paradigm. Nursing Research, 18, 405-408.

Snyder, H. (196). Sleep and dreaming. Science, 160, 1180-1182.

Speitz, A. (1985). Guidelines for nursing intervention: feeding scale. Nursing Child Assessment Satellite Training. University of Washington, Seattle, (mimeographed).

Stern, P.N. (1982). Affiliating in step father families: teachable strategies leading to stepfather-child friendship. Western Journal of Nursing Research, 4(1), 73-89.

Tulman, L.J. (1981). Theories of maternal attachment. Advances in Nursing Science, 7, 7-14.

Walker, B.B. (1972). The postsurgery heart patient: the amount of uninterrupted time for sleep and rest during the second and third postoperative days in a teaching hospital. Nursing Research, 21, 164-169.

Wenner, W.H., & Barnard, K.E. (1979). The changing infant: sleep and activity patterns during the first months of life. Nursing Child Assessment Sleep Activity Record. Nursing Child Assessment

Satellite Training. University of Washington, Seattle, (mimeographed).

Williamson, Y.M. (1981). Research methodology and its application to nursing. New York: John Wiley and Sons.

Woods, N.F. (1972). Patterns of sleep in postcardiotomy patients. Nursing Research, 21, 347-351.

Zelditch, M. (1969). Some methodological problems of field studies. In G. McCall & J.L. Simmons (Eds.), Issues in participant observation: a text and reader. Menlo Park, Calif.: Addison Wesley Publishing Company.

APPENDIX A

INFORMED CONSENT FORM

INFORMED CONSENT FORM

This is to certify that I _____ agree to participate voluntarily in a Master's thesis research project being conducted by Iris E. Campbell, a registered nurse and a graduate student in the Faculty of Nursing at the University of Alberta.

I consent to be interviewed and to have the interviews tape recorded.

I understand that:

a) I am free to refuse to answer any specific questions during the interviews.

b) I will not have to talk about any subject I do not wish to discuss.

I understand that:

a) the interviews will be kept confidential and will be used only for the research purpose described to me by the investigator.

b) my name will not be disclosed in the research report or in any subsequent research publications.

I understand that I am free to terminate any interview at any time and to withdraw from the project at any time without consequence. I am free to ask questions at any time.

I further understand that I may not directly benefit from participating in this research project.

_____ _____

(Signature) (Investigator)

_____ _____

(Date) (Date)

APPENDIX B

NURSING CHILD ASSESSMENT SLEEP ACTIVITY RECORD

NURSING CHILD ASSESSMENT SLEEP/ACTIVITY RECORD

CAREGIVERS USUAL BEDTIME _____
CAREGIVERS USUAL AWAKENING _____

CHILD'S NAME _____ (LAST NAME, FIRST NAME)
BIRTH DATE _____
DATE OF RECORDING _____

Date	12 Noon	1	2	3	4	5	6	7	8	9	10	11	12 Mid.	1	2	3	4	5	6	7	8	9	10	11	24 HR SUMMARY				
																									Totals				

SYMBOLS

_____
_____
_____
_____
_____
_____

SUMMARY

_____
_____
_____
_____
_____
_____

Developed by the University of Washington, School of Nursing NCAP Project.

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APPENDIX C

NURSING CHILD ASSESSMENT FEEDING SCALE
(BIRTH TO ONE YEAR)

FEEDING SCALE
(Birth of One Year)

I. SENSITIVITY TO CUES	Yes	No
1. Parent positions child so that child is safe but can move his arms.		
2. Parent positions child so that the child's head is higher than hips.		
3. Parent positions child so that trunk-to-trunk contact is maintained during more than half of the breast or bottle feeding (50%).		
4. Parent positions child so that eye-to-eye contact is possible.		
5. Parent's face is at least 7-8 inches or more from the child's face during feeding except when kissing, caressing, hugging or burping the child.		
6. Parent smiles, verbalizes, or makes eye contact with child when child is in open-face-gaze position.		
7. Parent comments verbally on child's hunger cues prior to feeding.		
8. Parent comments verbally on child's satiation cues before terminating feeding.		

		Yes	No
9.	Parent varies the intensity of verbal stimulation during feeding.		
10.	Parent varies intensity of rocking or moving the child during the feeding.		
11.	Parent varies the intensity of touch during the feeding.		
12.	Parent allows pauses in feeding when the child indicates by cry face, halt hand, back arching, pulling away, pushing food away, tray pounding, turning head, shaking head no or saying "no" or falling asleep or when child is in pause phase of the burst-pause sequence of sucking (75% of the time).		
13.	Parent slows pace of feeding or pauses when child averts gaze, places hand-to-ear, hand-to-mouth, hand-behind-head, hand-back-of-neck, hands over stomach, yawns, rubs eye or displays feet movement (75% of the time).		
14.	Parent terminates the feeding when the child turns head, falls asleep, compresses lips, pushes food away, shakes head "no" or says "no," once or more or after other methods (repositioning, burping, or waiting) have proved unsuccessful.		
15.	Parent does not interrupt child's sucking or chewing by removing the nipple, jiggling the nipple, or offering the child more or other kinds of food while child is eating.		
16.	Parent does not offer food when the child looks away, looks down, turns away or turns around.		

Subscale Total
(No. of Yes Answers) _____

II. RESPONSE TO DISTRESS INDICATE IN BOX WHETHER OCCURRED OR NOT, IF NO DISTRESS, MARK EACH BOX ("YES".)	Yes	No
17. Stop or start feeding in response to child's distress.		
18. Change the child's position in response to child's distress.		
19. Make positive or sympathetic verbalization in response to child's distress.		
20. Changes voice volume to softer or higher pitch in response to child's distress.		
21. Makes soothing non-verbal efforts in response to child's distress.		
22. Diverts child's attention by playing games, introducing a toy, or making faces in response to child's distress.		
23. Parent does not make negative verbal response in response to child's distress.		
24. Parent does not make negative comments to home visitor about child in response to child's distress.		
25. Parent does not yell at the child in response to his distress.		
26. Parent does not use abrupt movements or rough handling in response to child's distress.		

		Yes	No
27.	Parent does not slap, hit or spank the child in response to distress.		

Subscale Total (No. of Yes Answers) _____

III.	SOCIAL-EMOTIONAL GROWTH	Yes	No
28.	Parent pays more attention to child during feeding than to other people or things in the environment.		
29.	Parent is in en face position for more than half of the feeding (50%).		
30.	Parent succeeds in making eye contact with child once during feeding.		
31.	Parent's facial expression changes at least twice during feeding.		
32.	Parent engages in social forms of interaction (plays games with child) at least once during the feeding.		
33.	Parent uses positive statements in talking to child during the feeding.		
34.	Parent praises child or some quality of the child's behavior during the feeding.		
35.	Parent hums, croons, sings or changes the pitch of his/her voice during the feeding.		
36.	Parent laughs or smiles during the feeding.		

37. Parent uses gentle forms of touching during the feeding.	Yes	No
38. Parent smiles, verbalizes or touches child within 5 seconds of child smiling or vocalizing at parent.		
39. Parent does not compress lips, grimace, or frown when making eye contact with child.		
40. Parent does not slap, hit, shake, or grab child or child's extremities during the feeding.		
41. Parent does not make negative or uncomplimentary remarks to the child or home visitor about the child or child's behavior.		

Subscale Total
(No. of Yes Answers) _____

IV. COGNITIVE GROWTH FOSTERING	Yes	No
42. Parent provides child with objects, finger foods, toys, and/or utensils.		
43. Parent encourages and/or allows the child to explore the breast, bottle, food, cup, bowl or the parent during feeding.		
44. Parent talks to the child using two words at least three times during the feeding.		
45. Parent verbally describes some aspect of the food or feeding situation to child during feeding.		

		Yes	No
46.	Parent talks to child about things other than food, eating, or things related to the feeding.		
47.	Parent uses statements that describe, ask questions or explains consequences or behavior more than commands in talking to the child.		
48.	Parent verbalizes to child within five seconds after child has vocalized.		
49.	Parent verbalizes to child within five seconds after child's movement or arms, legs, hands, head, trunk.		
50.	Parent does not talk baby talk.		

Subscale Total
(No. of Yes Answers) _____

V. CLARITY OF CUES		Yes	No
51.	Child signals readiness to eat.		
52.	Child displays a build-up of tension at the beginning of feeding.		
53.	Child demonstrates a decrease in tension within a few minutes after feeding has begun.		
54.	Child has periods of alterness during the feeding.		
55.	Child displays at least two different emotions during the feeding.		

56.	Child has periods of activity and inactivity during the feeding.	Yes No
57.	Child's movements are smooth and coordinated during the feeding.	
58.	Child's arm and leg movements are generally directed toward parent during feeding (not diffuse).	
59.	Child makes contact with parent's face or eyes at least once during feeding.	
60.	Child vocalizes during feeding.	
61.	Child smiles or laughs during feeding.	
62.	Child averts gaze, looks down or turns away during feeding.	
63.	Child actively resists food offered.	
64.	Child demonstrates satisfaction at end of feeding through sleep, facial expressions, decreased muscle tone, arms extended along side, vocalizations or change in activity level or mood.	
65.	Child does not have more than two rapid state changes during feeding.	

Subscale Total
(No. of Yes Answers) _____

VI. RESPONSIVENESS TO PARENT	Yes	No
66. Child responds to feeding attempts by parent during feeding.		
67. Child responds to games, social play or social cues or parent during feeding.		
68. Child looks in the direction of the parent's face after parent has attempted to alert the child verbally or non-verbally during feeding.		
69. Child vocalizes to parent during feeding.		
70. Child vocalizes or smiles within 5 seconds of parent's vocalization.		
71. Child smiles at parent during feeding.		
72. Child explores parent or reaches out to touch parent during feeding.		
73. Child shows a change in level of motor activity within 5 seconds of being handled or repositioned by parent.		
74. Child show potent disengagement cues during last half of feeding.		
75. Child shows potent disengagement cues within 5 seconds after parent moves closer that 7 to 8 inches from child's face.		
76. Child does not turn away or avert gaze from parent during first half of feeding.		

Subscale Total
(No. of Yes Answers) _____

Enter Totals for Each Category
Sensitivity to cues
Response to distress
Social-emotional growth fostering
Cognitive growth fostering
Clarity of cues
Responsiveness to parent

Total Score
(No. of Yes Answers) _____

Barnard, K.E. (1978). Nursing Child Assessment Feeding Scale. Nursing Child Assessment Satellite Training. University of Washington, Seattle.